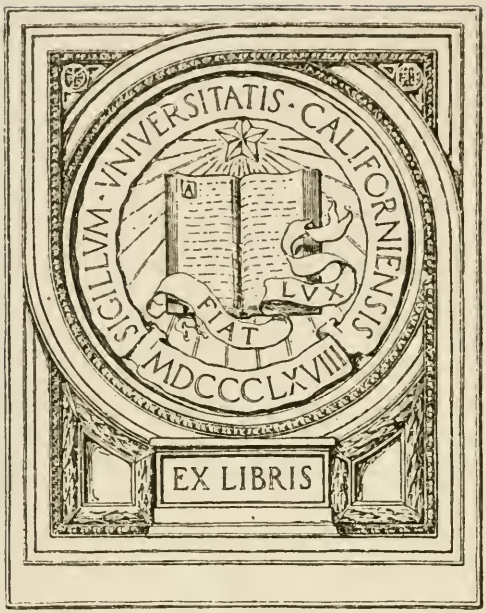

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THE FOURTEENTH YEARBOOK

OF THE

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

PART II

METHODS FOR MEASURING TEACHERS' EFFICIENCY

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LONDON AND EDINBURGH

THE MARUZEN-KABUSHIKI-KAISHA
TOKYO, OSAKA, KYOTO

KARL W. HIERSEMANN
LEIPZIG

THE BAKER & TAYLOR COMPANY
NEW YORK

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PART II

METHODS FOR MEASURING TEACHERS' EFFICIENCY

BY

ARTHUR CLIFTON BOYCE
Sometime Assistant in the Department of Education of the University of Chicago

Edited by S. CHESTER PARKER

THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILLINOIS

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Published June 1915

Composed and Printed By
The University of Chicago Press
Chicago, Illinois, U.S.A.

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PREFACE

The study of methods of measuring teachers' efficiency published in this *Yearbook* was begun by Mr. Boyce while a student in the Department of Education at the University of Illinois and was continued later while he was a student and assistant in the same department at the University of Chicago. It is one step in the process of applying methods of careful investigation to the study of a very important practical phase of school administration. Since this process of applying scientific method to practical contemporary educational problems has characterized the work of the National Society for the Study of Education, the present *Yearbook* continues the well-established publishing policy of the Society.

THE EDITOR

METHODS FOR MEASURING TEACHERS' EFFICIENCY

ARTHUR CLIFTON BOYCE
Sometime Assistant in the Department of Education of the University of Chicago

INTRODUCTION

NEED FOR RATING OF TEACHERS

The measurement of teaching efficiency is related to the efficiency of the school in three fundamental ways:

1. *Vocational guidance of teachers* requires a method for determining their relative merit. First, before students can be intelligently directed into the teaching profession, we must have an analysis of the qualities necessary for teaching efficiency as revealed in successful teachers. Secondly, we should have a method of analysis which would reveal the proper place for a teacher with given qualifications and the proper teacher for any given place.

2. A measuring scheme is necessary for *the improvement of teachers in service.* (*a*) It would serve as a basis for self-criticism and self-improvement on the part of teachers; with the standard before them, teachers need not wait till their weaknesses are pointed out by supervisors. (*b*) Such a standard is necessary if the supervisor's criticisms are to be complete and definite and therefore properly helpful. (*c*) The supervisor would not need to spend energy on all points but could concentrate on those points where the measurement revealed need for help. (*d*) The presence of a definite standard for efficiency would itself be a spur to improvement by laying emphasis on important points.

3. An even more effective spur to efficiency would come through the application of definite measurement to *the determination of promotion and dismissal.* (*a*) An important application in this connection would be to the salary schedule. The determining factors for salary adjustment are usually sex and length of service. Neither of these factors may properly determine a teacher's salary unless the school wishes to pay for something other than service rendered. Neither should the grade taught be made the basis of salary. Every grade is worthy of the teacher's best efforts. She should be paid according to her efficiency in

the place she has and should be encouraged to improve her value there instead of being encouraged to try for a different grade. (*b*) Some scheme of measuring teaching efficiency is needed as a basis for intelligent promotion in position. Promotion should be given to those who show promise of being more useful in the higher place. Politics and favoritism must be eliminated from the election and promotion of teachers and school officers if our schools are to be the efficient organizations they should be. (*c*) Finally, justice to the teachers demands that dismissals be made on an impersonal basis of proved inefficiency. Such a basis must be furnished by some method of determining efficiency which will make the cause of failure very clear.

The instrument likely to be of most benefit to the school in a proper selection of its teachers, in their improvement during service, and in properly rewarding their efforts is a measurement for teaching efficiency which shall be the basis for action in each of these important phases of the school's relations with its teaching body.

The present study is an attempt to make some progress toward meeting the needs described above, by trying to answer these questions:

1. How do school superintendents and principals determine the relative value of their teachers?

2. What are the qualities of teaching merit which should be considered in judging teachers?

3. What are the relative values of these qualities of merit?

4. What is the best way to determine the presence of these qualities in teachers?

5. What is the reliability of the judgments supervisors give of their teachers?

CHAPTER I

PRESENT METHODS OF MEASURING TEACHING EFFICIENCY

A study of present practice in that important part of school administration having to do with the measurement of teaching efficiency reveals the greatest diversity of method. The study also discloses a surprising number of large cities having no method at all in determining the relative specific efficiency of their teachers.

Replies from 242 representative cities in all parts of the United States are the source of our information as to methods used. Three hundred and fifty cities of over 10,000 population were asked to give us a brief statement of their methods of determining and recording the efficiency of teachers and to send us any printed rules, directions, schedules, or reports they might have in this connection.

In general, two methods are in use: examination and rating. The relative importance is shown by the following summary:

	Number of Cities Reporting
1. Promotional examinations	14
2. Schedule of qualities on which teachers are judged	133
3. Efficiency grades for teachers	99
4. Judgment of teachers not controlled	98

It will be seen that promotional examinations do not in general play a large part in measuring teaching efficiency. They are never the sole factor determining the teacher's rank but are found in combination with length of service or efficiency of service or both.

MEASUREMENT BY EXAMINATION

Purposes served by examinations.—Examinations as related to teaching efficiency have three avowed purposes: (1) to determine entrance into service, (2) to control promotion of teachers from one salary group to another or from present positions to those more responsible, and (3) to stimulate continued study on the part of the teacher.

1. Entrance to service in large systems must be controlled by some such civil-service examination as will eliminate those obviously unfit. Applicants lacking the necessary academic and professional information

may be sifted out by examination. Preliminary examinations of this sort are not properly measures of teaching efficiency. They are somewhat indicative of the probable teaching ability of the candidate and determine the order in which the successful applicants are taken into the service, but ability to apply the knowledge displayed in the examination must be tested during a period of teaching, or by referring to the applicant's past experience.

2. A more real connection between examinations and teaching efficiency is found in what are usually called "promotional examinations." When these examinations are used for the purpose of selecting principals, supervisors, or other school officers from the ranks of teachers, they are not different in character from those admitting applicants to service as teachers. The examinations are simply more extended and more searching, especially in fields having to do with administration or the special branch of supervision sought.

Examinations which determine the advance of teachers from one salary group to another vary greatly in character from city to city. They may consist of the earning of credits in college extension courses or summer schools, or the presentation of theses on professional problems, or papers reviewing certain professional reading, or they may be regular examinations set on professional or academic subjects. Choice of two or more of these types of examination may be offered at the same time. Eligibility to these examinations for promotion in rank or salary usually depends on the number of years the teacher taught and the success of her previous work.

3. In all cases it is evidently the purpose of the examinations for promotion to be a spur to and a test of continued study and professional interest on the part of the teachers in service. In most instances the taking of the examinations is optional, but the fact that further increase of salary depends on it is compelling enough.

Success of measurement by examination.—To discover to what extent the purposes of examinations are really accomplished would require an extended investigation into those systems which employ them. Superintendents differ widely in their opinion as to their value. That examinations are negatively valuable in eliminating weak candidates for teaching and supervisory positions is no doubt true, but that they are positively valuable in determining the relative merit of teachers in service cannot be maintained with confidence. In no case, how-

ever, so far as we are aware, are promotional examinations the sole basis of judging teaching merit. The result of the more or less artificial and detached examinations is considered in connection with the actual accomplishment of the teachers in the schoolroom, however this may be measured.

One objection frequently made to promotion by examination is that it forces on the teacher an amount of study she is not always ready to undertake, that if the teacher is conscientious and doing all that she can in the schoolroom she cannot spend time and energy on outside study without damage to her health or her regular work. This objection is overcome somewhat in those cities which make very close connection between the study for examination and everyday school work. Thus Baltimore insists that the thesis written as part of the examination in that city be on a problem in which the teacher is interested in connection with her daily work. In other cities the professional reading to be reported on is perhaps no more than the teacher should do without compulsion.

This objection applies also to work done in summer schools and college extension courses. When credits for promotion are earned in this way, teachers are usually limited as to the number that may be earned in one year. A more serious objection in the minds of teachers is that the expense involved in earning credits during attendance at a summer school is frequently more than the increase in salary justifies.

The stimulus which promotional examinations give to professional reading and study along other lines calculated to keep the teacher mentally alert and up to date is no doubt very large. Superintendents report that the introduction of promotional examinations has done much for their teachers in this way.

The fact that classroom efficiency is in almost all cases a condition of eligibility to promotional examinations, and that, in all but a small percentage of school systems, success in actual teaching work is the only basis of promotion aside from years of service, shows that "proved fitness in the classroom and out of it as a unit in a working machine" is the vital factor in the promotion of teachers.

Teaching merit is almost universally determined by some sort of rating or estimation of the value of the teacher by one or more school officers who are in a position to judge her work. The methods used in rating teachers is our next consideration.

RATING OF TEACHERS

Methods of rating teachers seem to fall into two classes, the first of which might be called the general impression method and the second, the analytical method.

General impression method.—We have at hand replies from approximately 100 cities which are plainly to be classed under this head. This method, if it can be called such, is doubtless characteristic of the majority of school systems and is one evidence of how little this important work of judging teaching efficiency has been systematized, rationalized, and controlled. The following quotations, taken almost at random from letters received, show very well the indefiniteness and looseness of such a method:

Aberdeen, South Dakota.—"We have 70 teachers, and our means of judging them is by visiting their classes and by the results they obtain in advancing the pupils under them."

Aurora, Illinois.—"The judgment of the superintendent as to the efficiency of the work done decides the promotion to the advanced salaries."

Baton Rouge, Louisiana.—"[The teachers are judged] by results obtained and opinion of principal based on observation of work."

Berkeley, California.—"The principal rates the teachers."

Canton, Ohio.—"We reappoint teachers with regular increase of salary according to schedule—provided they do good work. We decide this by visiting the school during the year."

Champaign, Illinois.—"Nothing but general observation. Until we can know the effect on the lives of pupils, we cannot rate the efficiency of teachers justly. I trust personal judgment."

Charlotte, North Carolina.—"Teachers are promoted according to their qualifications and fitness for the better position. This is left to the judgment of the superintendent and board."

Chicopee, Massachusetts.—"A teacher is judged by what she does or accomplishes with the material (apparatus and pupils) given her. Personal observation of her work."

Dubuque, Iowa.—"Nothing formal. The superintendent makes his rating, however, on the basis of the teacher's efficiency."

Easton, Pennsylvania.—"We have no definite plan when rating and promoting teachers except a general committee discussion at the end of the year."

Enid, Oklahoma.—"There are so many, *many* qualities which enter [into teaching efficiency] that our system has never undertaken to classify them. We take each teacher and get the product of all factors in *her*, without reducing her to a mathematical formula."

Fresno, California.—"The judgment of the principal and the superintendent is the basis of rating teachers."

Hamilton, Ohio.—"We have no fixed rule or schedule for rating teachers. The only question which we consider is the efficiency of her work, and this is gauged by the superintendent and principals."

Harrisburg, Pennsylvania.—"We have nothing of this kind except for entrance into our corps. Once in, all teachers advance automatically if good enough to retain at all."

Iowa City, Iowa.—"Largely the judgment of the principal and superintendent."

Johnstown, Pennsylvania.—"For the benefit of us supervisors, we classify the teachers at the end of the year into Excellent, Good, Fair, Failure—above based on general impressions."

Lansing, Michigan.—"General observation by principal and superintendent."

Mt. Carmel, Pennsylvania.—"Superintendent recommends promotion in salary and advises position as he sees teacher's fitness for work."

Nashua, New Hampshire.—"It is merely a question of judgment on the part of the superintendent."

Newburgh, New York.—"By observation of their work and results obtained."

Oswego, New York.—"Personal knowledge and observation [of superintendent]."

Sioux Falls, South Dakota.—"The superintendent and the principal judge the teacher by the progress made by the children under her charge."

It will be seen that the work of rating the teachers is done in one way or another by the principals or superintendents or both. The *way* is not specified and the judgments are apparently not controlled by any outline of factors, definitions, or rules of any kind. Any analysis of the situation is incidental and, if made at all, is made mentally and individually by the judges. The teachers are "rated" as good, bad, or indifferent, as worthy or unworthy of retention and promotion, according to the opinion of the one who judges them. There is nothing to tell what the judgment really means. No evidence is presented to support the final rating. The judge's opinion may be well grounded or not. As certain teachers under such a system declared, "The way to get promoted is to know your principal rather than your principles."

The dangers and disadvantages of such lack of method are obvious. The efficiency of the work must necessarily suffer when teachers are working to satisfy whims instead of working to attain worthy ends,

understood and set up by teachers as well as supervisors, or striving to please superior officers instead of working according to sound educational principles. The rating officer is safe if all the teachers are satisfactory and worthy of promotion, but what can he say if his judgment is called in question one way or the other, or if it disagrees with that of some other officer? There is no good evidence to give to the dissatisfied teacher or disagreeing officer. There is great opportunity for favoritism, and if partiality is not actually shown, the superintendent is in danger of being accused of it if he has nothing to show as a basis for his rating.

Moreover, one's general impression is not always to be trusted. We have evidence to show later that an officer's general impression may be modified when the teacher is studied in detail. Analysis reveals qualities of merit or demerit not realized before. The officer may be prejudiced for or against a teacher by some factor which is not vital to the teacher's efficiency. Justice to the teacher and the welfare of the school demand that the best be made of the teacher's possibilities as well as that deficiencies be discovered and corrected. "General impression" and the "indefinable something," looked for by many superintendents, can help but little in improving the teaching force.

Some superintendents, however, are firmly convinced that their personal general impression of a teacher is all that is necessary to place her correctly and that an analysis is worse than a waste of time. If no other purpose were served by rating than that of determining general efficiency or inefficiency, and if all schools were blessed with expert judges of teachers, we should not need analysis; general impressions would be enough. But it is important to know in what particulars teachers are superior or inferior if they are to be properly placed or helped. In judging handwriting it may be fairly easy for one to tell whether a particular sample is better or worse than another, but if the critic is to help the poor writer he must be able to point out specific points of deficiency. He must analyze the writing into slant and spacing and size and alignment and make his recommendations accordingly if they are to accomplish what they should. In helping poor writers, general impression is not enough. In the vastly more complicated problem of discriminating between the efficiency of teachers and in helping teachers where they most need help, general impression is very far from being enough.

Besides this, not all the school officers who are called on to pass judgment are expert judges of teaching efficiency. A schedule of qualities in the hand of the non-expert judge of teachers will not make him an expert but it will tend to make his judgments more adequate and uniform, and therefore more expert, than they would otherwise be, and will insure greater reliability. The expert will be developed by training and practice.

Analytical method.—In the rating schemes which attempt to analyze the teacher's efficiency and judge her in systematic fashion, one finds all degrees of complexity. Some have as few as two points to be reported on; while in others as many as 75 or 80 points are taken into account, analyzing the work most minutely.

Four general types of rating schemes can be distinguished in the hundred or more which we have collected.

1. Descriptive reports involving a written statement by the supervisory officer. Such a report may leave the supervisor free as to the points to note, or it may specify the points minutely. Thus, Oakland, California, requires Report on Teaching and Report on Discipline. In Hannibal, Missouri, the principal reports on four points, viz.: (1) Discipline, (2) Teaching Power, (3) Accuracy, Neatness, and Promptness of Record Work, and (4) Professional Spirit. Alameda, California, uses a descriptive blank with thirteen factors noted while the one reporting is aided by a list of questions under each point.

2. Racine, Wisconsin, and Middletown, New York, represent a second type in which a series of questions is asked. Most of the questions are answerable by "Yes" or "No." Some require a brief statement of fact.

3. A third type of report blank is used by Philadelphia, St. Louis, and a number of other cities. The teachers for a building are listed usually in order of general excellence. Opposite each name is placed some indication of the teacher's general efficiency and her grade in each of the few specified items. The St. Louis plan uses six topics: (1) Management of Children, (2) Instruction, (3) Attention to Details of School Business, (4) Scholarship, (5) Professional Interest and Zeal, (6) Personal Qualification. Each of these terms is defined on the back of the blank. The mark for each quality is to be the initial letter of one of the following words: Excellent, Good, Medium, Unsatisfactory.

A number of cities use a separate card for each teacher and a grade is set down opposite each quality of merit.

Dallas, Texas, presents a list of qualities with three or four descriptive adjectives following each. Those adjectives which do not describe the teacher are crossed out.

The classroom instruction card, published by the New York Bureau of Municipal Research, is widely used "as a scale for self-measurement by teachers and as a memorandum for supervisors." The card calls attention to nearly a hundred details, usually giving the critic alternative replies to be checked.

4. A fourth type is that in which definite numerical values are given to the various qualities, and subtractions made from the maximum value of any quality in proportion to the deficiency. One of the simplest of such score cards is issued by the Department of Public Instruction of the state of Indiana. The Indiana scheme has three headings:

Teaching power	given 45 points
Government	" 35 "
General characteristics	" 35 "

We have at hand 10 such schemes, varying in complexity from this simple one to that proposed by Professor Elliot of Wisconsin which distributes 1,000 points over 42 separate qualities of merit.

Summary of rating schemes.—The qualities emphasized: Any attempt to summarize the qualities found in the many schemes proposed can be only partly successful, owing to the diversity of meaning for the same terms and difference in expression. An examination of 50 rating schemes revealed 150 factors which, however, were not all different. Thus we find six different ways of expressing Instructional Skill and ten different statements for Discipline. There is much overlapping among the qualities. As well as we could, we have combined the 150 factors and reduced them to 53, the most important 25 of which we present in Table I.

The method of marking: The terms in which teachers are reported or graded on single items, or terms in which the "efficiency grade" is given, have been obtained from 68 cities. The character of the marks and the frequency of each are given in Table II and following that the number of ranks used and their frequency.

Discussion of rating schemes.—Now that we have in mind the general characteristics of the rating schemes as employed at present, let us see what are the advantages and disadvantages of these devices and the difficulties presented by this method of measuring teaching efficiency.

The descriptive method of reporting a teacher's efficiency has the advantage of giving the critic great freedom in what he shall report

TABLE I

Qualities	Frequency
Discipline	49
Instructional skill	30
Scholarship and education	29
Co-operation and loyalty	30
Plan and method	28
Personality	20
Professional interest	16
Manner	15
Voice	14
Daily preparation	13
Accuracy and promptness	12
Professional training and preparation	12
Attitude toward criticism	12
Appearance	11
Health	11
Routine	11
Teacher's growth and improvement	10
Attitude toward work	10
Attitude toward pupils	10
Character	9
Tact—sympathy	9
Skill in questioning	9
Personal influence	9
Housekeeping	8
Results	8

but is wasteful of time and energy in the large amount of clerical work involved. Large freedom in reporting is not an advantage to all judges of teachers. The value of the report depends too much upon the supervisor's ability to bring to mind all the points which should be reported, and upon his ability to express himself easily and accurately. Unless the points on which report is to be made are carefully specified,

the one reporting may easily emphasize some one point to the total exclusion of others equally important. In addition to the labor involved in making such a report and especially a large number of them, diffi-

TABLE II

Character of Mark	Frequency
Excellent, Good, Medium, Fair, Poor	1
Excellent, Good, Fair, Poor	10
Excellent, Good, Poor	1
Satisfactory, Unsatisfactory	2
Below Average, Average, Above Average	1
Satisfactory, Fair, Not Satisfactory	1
Excellent, Good, Inefficient	1
Excellent, Good, Fair, Unsatisfactory	3
Excellent, Good, Fair, Poor, Very Poor	1
Excellent, Good, Medium, Unsatisfactory	2
Excellent, Very Good, Acceptable, Fair, Unsatisfactory	1
Excellent, Good, Medium, Poor, Failure	1
Superior, Strong, Good, Fair, Failure	1
Excellent, Very Good, Good, Fair, Poor, Very Poor	2
Excellent, Very Good, Good, Fair, Poor	3
Excellent, Good, Fair, Poor, Unsatisfactory	1
Good, Fair, Poor	1
Superior, Excellent, Good, Moderate, Unsatisfactory, Very Unsatisfactory	1
Perfect, Excellent, Good, Fair, Poor, Very Poor	1
A, B, C	4
A, B, C, D	6
A1, A, B, C	1
Adjectives	1
Percentages (values distributed)	10
Description	1
Letters, *ad lib.*	1
Answers to questions	1
Figures (1, 2, 3, etc.)	7
Number of schemes using:	
2 ranks	2
3 ranks	11
4 ranks	24
5 ranks	12
6 ranks	4
7 ranks	1

culties are encountered when the reports are made use of later. They have to be read as laboriously as they were written. There is no way in which they can be summarized quickly and accurately. There is no way in which one teacher can be compared with another with any assurance.

Reports giving answers to questions are easier to make out than the purely descriptive type since they require less time and effort for composing and writing. They are also more easily read. If the answers to the questions or the rank allotted to the teacher in a given quality are expressed by symbols such as letters or figures, still more time is saved. In each case, however, the symbols have to be translated into meaningful terms by the one using the report afterward. The difficulty of quick and accurate summation to obtain a general efficiency grade still presents itself.

Rating schemes which assign definite values to the various qualities considered are easily summated but have more serious defects of another kind. The difficulty here lies in the values and in the use made of them. First, doubt arises as to the validity of the values assigned. It is obvious that qualities of merit are not all of equal value, but who is to say how much one quality is worth in relation to general merit? Who knows whether Instructional Skill is worth $\frac{1}{2}$ or 2 or 5 or 25 times Discipline? It is perfectly legitimate for the individual superintendent or the superintendent and his supervisors to fix upon a scale of values for the factors in question, but it would be the merest chance if the values assigned in this arbitrary manner by one man or a group of men were the true values and gave the proper weight to each factor. It is not at all likely that two men or two school systems would assign the same set of values unless one copied from the other. This complicated problem of the relative value of qualities of merit will be considered at length later in our study.

Secondly, the process of "cutting" for deficiencies is not sufficiently regulated in many cases. The values are assigned to the separate qualities but the one using the score card is not given any instructions as to how much shall be taken off if the deficiency is large or small. It will make the greatest difference whether the judge uses the whole of the scale or only the top of it. Thus if the maximum values are those of the Indiana score card and the teacher is barely passable, which one of the following scores shall she be given?

	Maximum Values	Passing Mark 90	Passing Mark 75	Passing Mark 50
Teaching power.....	45	41	34	22
Government.....	35	32	27	18
General characteristics...	20	18	15	11
	100	91	76	51

If the Indiana rule were applied she would probably receive the grade of 91, since grades above 90 are satisfactory. If 75 were the passing mark, then her grade might be cut to 76. If the whole scale were used and failure were scored down near zero, then 51 would probably be the grade assigned. Unless definite rules are established and approximately equal cuts are made for approximately equal deficiencies, ratings by different judges are not comparable and cannot be mutually understood.

The difficulty cited above is avoided in some instances by accompanying the scale of values by a scale of cuts to be made. Thus one plan in which the maximum for Teaching Skill is 20, designates that if Poor the teacher be given 12, if fair 14, Medium 16, Good 18, and if Excellent 20.

As we have said, numerical scales of this kind are easily reduced to a success grade, but they are not at all easily read in detail, and the estimate of a given detail of the teacher's work is often more necessary than a general success grade. To determine what a teacher is worth in any one particular, the grade given the teacher on that point must be compared with the maximum grade possible and then one must reflect whether the subtraction for deficiency is large or small. Unless the subtractions to be made have been prearranged and specified, the marks on individual points may be very largely meaningless.

Another criticism of rating schemes has to do with the choice of the terms which form their basis. In response to the demand for brevity, the list may be made very short, in which case, in order to cover the ground, the terms have to be very general. The value of the terms, in analyzing the teacher and her work, becomes less as the terms become more general and more inclusive. Vagueness and indefiniteness are faults too prevalent in rating schemes. The need is for terms which are definite and precise.

Indefiniteness and lack of precision can be overcome largely by careful definition, but comparatively few of the plans we have examined make use of definition.

The greatest obstacle to the operation of rating schemes of whatever kind is the insurmountable personal factor. By the very nature of the case the judging of teaching efficiency is a personal process and one which can by no means be done in a purely mechanical way. Even if we knew all the factors entering into teaching efficiency and had a perfect objective measurement for every factor, persons and personal judgment would not be eliminated. Nor is it necessary or desirable that they should be eliminated. The necessary thing is to eliminate *mere* personal *opinion*, to make sure that all the elements of teaching efficiency, so far as we know them, are given proper consideration and weight in the formation of the final judgment, and that every judgment be based on a sure foundation of facts and sound educational principles. It is further necessary that the rights of the teacher be so safeguarded by careful control and guidance of the process of judging efficiency, that no teacher may have grounds for complaint that the rating is prejudicial against her. At the same time, the good of the school must be equally protected by making it impossible for the rating officer to escape trouble or inconvenience by rating all teachers high or without discrimination.

Use made of teachers' ratings.—Teachers are rated principally for the following reasons: (1) for the private information of the superintendent; (2) for the purpose of furnishing a basis for salary adjustment, or to control salary adjustment; (3) for use in connection with other factors, such as length of service, examination, or special work to determine promotion; (4) to improve the teachers in service.

1. A superintendent with a large body of teachers cannot know them all in all details as he would like. His rare observation of individual teachers must be supplemented by reports of some kind from principals and supervisors. Some superintendents, however, declare that any attempt to use the ratings officially causes jealousy, hard feeling, and trouble generally because of the teacher's unwillingness to accept the rating, especially if it is low. This is declared to be even more true when the ratings determine in whole, or in part, the salary which the teacher receives.

2. In spite of the difficulties involved, the state of Indiana and numerous cities have tried to make the connection between efficiency as determined by some method of rating and salary.

The minimum-salary law of Indiana requires that the salary be based on length of service and the grades made for the certificate. "The

amount of salary per day is determined by multiplying a certain number of cents by the general average on the highest grade of license held by the teacher at the time of contracting. The number of cents to be multiplied is $2\frac{1}{2}$ for beginners, 3 for those having had one year of experience, and $3\frac{1}{2}$ for those having had at least three years of experience. After the teacher has taught one year, the success grade enters into the general average."[1]

A circular of information from the office of the superintendent of schools of Philadelphia indicates the relation of rating to salary in that city.

Circular of Information

As part of the revision of the salary schedule effective January 1, 1913, when the salaries of teachers were increased, the Board of Public Education adopted the following provision:

> The annual increases heretofore given to kindergarten teachers, teachers of primary grades, male teachers in grammar grades exclusively, male teachers of woodworking in the seventh and eighth grades, all other teachers of grammar grades exclusively, special classes, and elementary manual-training classes, shall cease at the expiration of the fifth year, unless the teacher who is completing the fifth year shall be certified to the assistant district superintendent of the appropriate district by the principal or supervising principal of the school as competent, and such district superintendent shall submit the same to the Superintendent of Schools for presentation to the Committee on Elementary Schools. [Rule XXXII.]

The ten annual increments provided in the schedule are thus divided into two series. The first series includes four increments, and the second series, six increments. Advancement within each series is automatic for all teachers holding permanent certificates. The rule quoted above means that no teacher can be advanced to the second series unless such teacher is certified by the principal as "competent" and such certification receives the approval both of the district superintendent and the Superintendent of Schools.

By action of the Committee on Elementary Schools, a teacher in order to be regarded as "competent" within the meaning of this rule must have received a rating of at least 80 per cent.

Teachers who, upon becoming eligible for consideration for advancement into the second series of annual increments, fail to qualify for same, will be duly considered for such advancement at the end of each subsequent year.

M. G. Brumbaugh, *Superintendent*

October 10, 1913

[1] W. C. Ruediger, *Agencies for Improvement of Teachers in Service.*

Superintendent Monroe, of Muskogee, Oklahoma, in his report for 1912–13 has this to say as to the use made of the rating blank used there, and regarding the success of its application to salary regulation:

Having once been recommended for a position in our schools by the committee and elected by the Board, teachers are practically secure in their positions as long as they render efficient service. By a system of efficiency grading teachers are automatically re-elected or dropped in accordance with the estimate of success in teaching as determined by the ratings of the supervisory officers of the Board. In accordance with the standards adopted teachers are rated at the end of the school year into classes A, B, C, and D. Those rated in the D class are dropped without question, those in the C class are dropped or conditionally re-elected, and those in the classes B and A are re-elected, the latter receiving a slightly larger increase in salary than the former. This system assures the reappointment of teachers solely on the basis of merit and efficiency. Church preference, politics, and personal pull are not permitted in any way to influence the election of a teacher or to maintain an incompetent teacher in our schools. Under this system those engaged in the supervision are responsible if unworthy or incompetent teachers are retained in the Muskogee schools. Some of our best teachers leave us every year because we are unable to retain their services at the compensation we offer, but aside from this the system inaugurated and maintained by the present Board of Education is gradually improving the teaching force of the schools and will continue the improvement so long as it is maintained.

The "Schedule of Qualifications and Salaries" of the Board of Education of Decatur, Illinois, sets forth the requirements for their teachers and the annual increments for the various classes of teachers, and then goes on to say:

Advancement from year to year until the maximum is attained shall depend (1) upon successful experience (not falling below 80 and not falling below a grade once held) evinced by the combined quantitative judgment of the supervisory force, such judgment to be expressed in written figures at least once per year, and (2) upon the continued professional growth through meeting the requirements imposed by the Board of Education (to be announced in bulletins or syllabi from time to time) in matters of study, attendance upon meetings—local, county (the teachers' institute), and state, etc.

A rank once attained may be lost if the teacher retrogrades in success or fails to evidence professional growth both in spirit and in the mastery of the study prescribed by the Board of Education.

A teacher who changes the class to which she belongs by adding to her equipment shall begin on the schedule in the new class which she enters at the

salary she drew in the old class, provided the new salary shall always be equal to or in excess of the old salary. Only official evidence of credits earned in an institution shall be considered in determining a teacher's class and her advancement in the same.

The "Salary Schedule" (sec. 4) of the Hannibal, Missouri, public schools, provides that a teacher "may not be advanced in salary if the principal's semiannual report on the last year's work done and the Superintendent's estimate leave room for doubt as to her strength in discipline, teaching, and professional spirit."

Superintendent C. C. Green, of Beaver Falls, Pennsylvania, reports the successful use of a rating scheme in controlling salary increase. The teachers there are divided into three classes, according to certificates held and experience. There is an automatic increase, for satisfactory service, of $5.00 in each class, up to a maximum.

3. Teachers' ratings are seldom considered alone in adjusting salary. They may be combined with length of service as in the practice of Decatur, Hannibal, and Beaver Falls described above, where there are annual increments of salary up to a maximum, provided efficiency is shown by the ratings to be satisfactory.

Charleston, South Carolina, has eight grades in the salary schedule for its teachers. Advancement from Grade I to Grade VII is automatic, provided the teacher's work is reported as satisfactory. If the rating is unsatisfactory, the teacher remains in the same group another year, after which she may be dropped if still unsatisfactory. Promotions from Grade VII to Grade VIII, the highest salary group, are made "on the recommendation of the Principal and Superintendent, for special efficiency, or when put in charge of a class in the highest grade of the Elementary School. In the promotion for special efficiency, the teacher prepares a paper on a subject assigned by the Superintendent in lieu of standing an examination." A schedule of qualities is the basis of the principal's report. "The final rating is given on a personal conference between the Principal of the school and the Superintendent, and in the case of teachers in primary grades, after consultation with the Primary Supervisor. The tests given by the Superintendent during the year are also considered in the report on efficiency."

In Springfield, Ohio, an annual increase of $50.00 is allowed to each elementary teacher, until the salary of $750.00 is reached, subject to the following requirements: (*a*) Efficiency of classroom work must be

rated as Fair or higher, to be granted each of the first three annual salary increases; and Good or higher, to be granted the fourth and all subsequent increase. (*b*) With certain exemptions, each teacher is required to make a study each year of one book in psychology or some phase of pedagogy; one general work on the subject-matter of some school study; and some book of literary and cultural nature. (*c*) Exemption is made in whole or part for summer study in normal school or college, or for work done in a study club.

Columbus, Georgia, provides for annual increase up to a maximum. Further increase is according to the following regulation:

PROMOTIONS

After any one of the class of assistants has served one year at the maximum salary of his class, he may have a further advance of $75.00 in the yearly salary by receiving an efficiency rating of not less than 85 per cent and passing satisfactory academic and professional tests. Notice in writing of the desire for such promotion must be given the Board one year in advance. The Superintendent and Principal of the school shall then make careful inspection of the work of such teacher and make to the Board, for the purpose of record, four reports each at regular intervals during the year. These reports will show the teacher's practical efficiency in management of children, instruction of class, and attention to school business, and will also show his professional qualities of scholarship, professional interest and zeal, and strength of personality. At the end of the year such teacher shall submit a paper of not less than 1,500 words on one of several professional topics assigned by the Superintendent and satisfactorily discuss the paper with the Board of Examiners, and shall make good an examination in three professional subjects and two academic subjects other than his specialty, if any.

Having met these requirements, the increase of $75.00 in his annual salary shall continue through a period of four years, after which another advance of $75.00 in the yearly salary may be had in like manner upon an efficiency rating of 90 per cent and similar tests on advanced subjects.

4. It is no doubt the intention of all the cities rating their teachers that the scheme should be a means of improving the teachers in service—directly, by pointing out weaknesses, or indirectly, through the control of the salary increase. Some cities use rating schedules only for the avowed purpose of improving their teachers. The score card of the New York Bureau of Municipal Research is one that has been widely used for this purpose (see Appendix, p. 82). The card is given to a

teacher that she may rate herself and thus, if she is honest with herself, discover points for improvement. The same scheme and others are used as a basis of supervisory criticism. The teacher knows what she is being graded on and can more easily come up to supervisory standards. Indeed, no rating blank should be used which cannot be put into the hands of the teacher. The ratings ought to be of such a character that they could be discussed with the teacher.

CHAPTER II

STUDIES OF QUALITIES OF MERIT AND THEIR VALUES

Discussions of the "ideal teacher" are numerous in educational literature. Every educational essayist has described that mythical creature in glowing terms. The pages of the reports of the National Education Association are full of her virtues. There is much of inspiration and suggestion in these discussions but little or nothing of scientific value, little of which a superintendent could make practical use. Each writer or speaker has described the qualities as they appeal to him, usually emphasizing one or two virtues to the exclusion of others. The great bulk of the writing on the subject of teaching merit has been of the subjective, a priori type without any basis beyond the theory and experience of the one who was writing.

Some work has been done to determine qualities of merit and their relative value in more objective and impersonal ways. There is a movement toward analysis of the qualities of teachers as they are, instead of a priori discussions of what they ought to be. If some adequate analysis can be made of the best teachers we now have and if we can determine, even roughly, the relative value of qualities of merit in them, we have advanced a little toward the stating of efficiency in scientific terms. It is our purpose at this point to examine some of these studies as preliminary to further work along this line.

The earliest investigations of this kind were built upon what boys and girls had to say about their best teachers and the teachers who helped them most. We review here two of these studies.

"*Characteristics of the Best Teacher as Recognized by Children*" (Kratz[1])

It was the purpose of this investigation "to learn something of the children's ideas as to what constitutes the most helpful teacher, and what are the chief characteristics of the best teacher."

The plan was to ask the pupils of a room to recall all their teachers as fully as they could, and single out the one who helped them most. They were then asked the following questions: (1) "In what way did she help you?" (2) "Do you recall any special word or act of hers which greatly helped you? If so, what is it?" (3) "Will you write, in half

[1] H. E. Kratz, *Studies and Observations in the Schoolroom* (Boston: Educational Publishing Co., 1907), chap. v.

a dozen sentences, a description of the best teacher you have had, without naming her?"

There were brought together 2,411 papers from Grades II–VIII. A few of the most common characteristics are given in Table III.

TABLE III

	No.	Helped in Studies	Personal Appearance of Teacher	Good or Kind	Patient	Polite	Neat	Cross
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
II	404	100	59	53	2	2	2	1
III	581	100	57	52	4	5	8	2
IV	511	95	68	63	9	5	11	2
V	347	85	50	67	16	7	6	3
VI	245	55	41	55	14	7	4	5
VII	157	40	74	45	14	2	9	2
VIII	166	39	64	38	22	3	11	0
Total	2,411	.....	58	55	9	7	4	2

In answer to the first question, "How did she help you?" the lower grades mentioned such things as, "to be good," "to study," "to like school," "to be polite," and the like, while the higher grades said, "to observe," "to control myself," "to strengthen my character."

The question about special acts of the teacher which helped the pupils brought out "a deep sense of appreciation of words of encouragement and commendation," and appreciation which was manifested "to a greater degree than anticipated in higher grades."

"In every grade, except one, more than half of the pupils gave prominence to the teacher's dress and personal appearance."

Patience was highly appreciated. Politeness was frequently referred to. Neatness of the teacher's dress and also of her desk was a trait many recalled.

Mr. Kratz gives numerous quotations from papers of individual pupils which are interesting as showing how hard it is for teachers to conceal their failures and shortcomings from the children. The study has in it much food for thought for careless teachers as well as for those who would be favorites with grade children.

The investigation is of little importance for our present purpose of determining values of qualities of merit but it is suggestive and a step in the right direction.

"*The High-School Teacher from the Pupil's Point of View*"(Book[1])

Mr. Book's material for this discussion of the high-school teacher came from 1,067 Senior high-school students who were asked by their teacher of English to write a composition on "High-School Education." One of the points to be discussed freely was "some sympathetic teachers I have had in the high school, or the reverse." The sympathetic teacher is defined in the pupil's own words as "the favorite teacher," "the teacher best liked," "the one who is respected and loved by all," and in other similar terms. What the pupils say about their teachers is given under three heads: (1) their character, (2) their qualifications, (3) what they did.

1. The favorite teacher's character:

One hundred and forty-four said their favorite teacher was *kind*, *forgiving*, and *generous*. These qualities were most often emphasized.

One hundred and twelve students said more emphatically that their most helpful teacher was *pleasant*, *cheerful*, *good-natured*, *happy*, *even-tempered*, and *sociable*.

A third group of adjectives, used to describe 104 of the ideal teachers included the following: *patient*, *considerate*, *thoughtful of the feelings of their pupils*, *reasonable*, *not cranky*, *not over-particular* or *unreasonably strict*.

"Fifty-nine pupils especially liked teachers who were *firm*, *decisive*, *business-like*, and *strict*.

"Forty-six of the sympathetic teachers discussed [all described by girls] were said to be especially *inspiring*, *easy to approach*, and the like."

"Twenty-six students mentioned the fact that their favorite teacher was *serious*, *earnest*, *rather dignified*, *unassuming*, and *quiet*."

"A few teachers were said to be *good*, *polite*, *courteous*, or *refined*. *Hypocrisy* is especially disliked while *sincerity* is highly commended."

"Lastly the sympathetic teacher was described as wholly *unselfish* and *self-sacrificing*."

2. Qualifications described:

(1) The favorite teacher *understands boys and girls*.

(2) Another qualification from the point of view of the students is that the teacher be *enthusiastic*, *energetic*, *young*. By *young* the pupils do not mean so much an age distinction as one of mental attitude. Being *young* means being enthusiastic, full of life, up to date.

(3) To be recognized as an ideal teacher one must be *interested in work*.

[1] W. F. Book, *Pedagogical Seminary*, XII, 239–88.

(4) Another essential qualification is *scholarship*, but one must not be a narrow specialist.

(5) No definite *sex qualification* is made.

(6) Neither was any *appearance qualification* made. This is in contrast with Kratz's study of grade children, in which it was found that neatness and appearance were important qualifications. Says Book, "High-school pupils seem not only to appreciate but to be accurate judges of a teacher's real worth."

3. What the favorite teacher does:

"Two hundred and eleven teachers were chosen as favorites chiefly because they were always ready and willing to give their pupils the right sort of encouragement."

"In all his dealings and intercourse with his pupils the favorite teacher is *reasonable*, *fair*, and *just*. Justice received special emphasis." The teacher allows for individuality.

"The pupils' favorite teachers have confidence in their students, put them on their honor, believe in them, and trust them."

The pupils like a teacher who "takes an interest" in them outside of school, as well as in.

The favorite teacher makes the class work pleasant and interesting, by clear explanations, originality, much free discussion, and by his attitude and manner.

In general, the author's conclusions are as follows:

1. Pupils demand constant direction and encouragement, which only teachers with certain definite qualifications and qualities of character are able to give.

2. The common virtues and the more fundamental qualifications are the ones which most appeal to high-school students.

3. The teacher's ability to understand boys and girls is of primary importance.

4. Boys and girls require different treatment but in the main they like teachers with much the same characteristics.

5. Sex is not a vital factor.

There is no hint in these two studies of any possible quantitative relation between the qualities of merit. The discussions are all in general, qualitative terms such as the children suggest. Their value lies in the fact that they make an effort to get at the real qualities of real teachers and do give some basis for action. The studies are limited by the fact that the children whose impressions they summarize are not able to analyze the teacher very minutely or to

give anything beyond certain personal characteristics of their "favorite teacher."

The fuller analysis must be made by superintendents and others who know teachers more intimately on the professional side and who are able to state in more exact terms the differences they find in teachers. Furthermore, the statement that one quality is more valuable than another leads to the question, How much more? It is necessary to introduce quantitative relations.

The later studies have tried to do this by appealing to superintendents for information and attempting to determine the quantitative relations by statistical method. The success of these efforts will be indicated by the investigation which we review below.

"*Qualities of Merit in Teachers*" (Ruediger and Strayer[1])

These investigators had a number of principals and superintendents rank their teachers, first according to General Merit, and then according to each of ten possible factors of General Merit. They secured information as to the grade taught, preparation and experience of each of the teachers ranked. Returns from 26 schools were used.

Correlations between General Merit and each of the specific qualities of merit were made by the method of Woodworth's Percentage of Displacement. The results are condensed in Table IV which is rearranged to give the qualities in what appears to be the order of their importance.

TABLE IV

General Merit	No. of Cases	Range	Median	Average	M.V.	R.E.	Pearson
1. Control or ability to keep order	25	0–100	22	22	12	11	56
2. Teaching skill; method	26	0– 70	17	23	15	13	54
3. Initiative or originality	26	4– 53	25	25	11	8	50
4. Strength of personality	26	0– 70	25	27	13	11	46
5. Progressive scholarship or studiousness	24	0– 53	30	28	12	11	44
6. Ability to carry out suggestions	24	0– 50	25	29	10	10	42
7. Accord between teachers and pupils	26	0– 60	33	31	10	10	38
8. Experience in years	25	10– 60	29	32	11	8	36
9. Social factor outside of school	23	10– 66	36	36	11	7	28
10. Personal appearance	24	10– 61	44	40	10	7	20
11. Health	18	6– 67	50	48	10	7	4

[1] *Journal of Educational Psychology*, I (May, 1910), 271.

The following manipulation of the correlation coefficients has been suggested to indicate the values of the factors relative to each other.[1]

TABLE V

General Merit	Control	Teaching Skill	Initiative	Personality	Studiousness	Carrying Out Suggestions	Accord	Experience	Social	Appearance
Teaching skill	1.04									
Initiative....	1.12	1.08								
Personality..	1.21	1.17	1.08							
Studiousness	1.27	1.23	1.13	1.05						
Carrying out suggestions	1.33	1.28	1.19	1.09	1.05					
Accord.....	1.47	1.42	1.31	1.22	1.16	1.10				
Experience ..	1.55	1.50	1.39	1.28	1.22	1.17	1.06			
Social.....	2.00	1.92	1.78	1.64	1.57	1.50	1.35	1.28		
Appearance .	2.80	2.70	2.50	2.30	2.20	2.10	1.90	1.80	1.40	
Health.....	14.00	13.50	12.50	11.50	11.00	10.50	9.50	9.00	7.00	5

It will be noted that Control and Teaching Skill are the most important items in this list, while the physical qualities of Health and Appearance stand lowest. Whether or not the qualities stand in the exact relation shown by the table is of course extremely doubtful. Only extended and prolonged experimentation can establish it. That such a relation may be found, however, is indicated by this and other studies.

The value of experience in modifying teaching ability is discussed by Professor Ruediger, as follows:

> The positive correlation between length of service and general merit is significant. The correlation is indicated by several other comparisons that we have made. The teaching experience of the 204 teachers from whom data were supplied under this head ranged from a fraction of a year to 34 years, with an average of 10 and a median of 8; 25 per cent had taught less than 5 years, while 26 per cent had taught over 14 years. The average and the median number of years taught by the teachers ranked first were, respectively, 14 and 10.5 years, and for those ranked second, 12 and 10.5 years. No teacher ranked either first or second had taught less than 5 years, and only 4 per cent had taught more than 25 years. The average number of years taught by those ranked lowest was 8 years and by those ranked second lowest 9 years. The medians for these were, respectively, 4.5 and 6 years. When the two

[1] *School Review Monographs*, No. V, p. 18.

oldest teachers are removed from the lowest group, the average drops to 6 years; and when the oldest is removed from the second lowest group, the average drops to 8 years. These three teachers had taught, respectively, 24, 30 and 32 years; 70 per cent of the teachers in the first rank, 60 per cent of those in the second rank, 40 per cent of those in the second lowest rank, and only 30 per cent of those in the lowest had taught 10 years or more. This indicates either that teachers keep on improving and passing to higher ranks for at least 10 years or that the poorer teachers are gradually eliminated from the service. Both factors may play a part. From the figures as a whole one may infer that a teacher in the grades reaches first-class efficiency in about 5 years, that he maintains this efficiency for about 20 years, and that after about 25 years of service he begins to decline.[1]

"Qualities of Merit in High-School Teachers" (Boyce[2])

Following the above-named study of the elementary teacher by Ruediger and Strayer, the writer made a similar investigation in the secondary field. In this case a list of 21 possible factors of teaching efficiency was presented to over 200 superintendents and high-school principals, with the request that they rank their high-school teachers, first according to General Merit and then according to each of the separate qualities of merit. Reports from 27 schools were made use of.

The method of correlation used in determining the relation of each quality to General Merit was that indicated by the formula:

$$r = \cos \frac{\sqrt{bc}}{\sqrt{ad} + \sqrt{bc}} \pi$$

in which a equals the number of cases in which individuals are above the median rank in both of the qualities compared; b equals the number of cases in which individuals are above in the first quality and below in the second; c equals the number of cases in which the individuals are below in the first quality and above in the second; d equals the number of cases in which individuals are below in both qualities.

In those classifications where the Pearson coefficient has not been worked out, the teachers were divided arbitrarily into three classes, Good, Medium, and Poor. By Good is meant those ranked first or

[1] *U.S. Bureau of Education Bulletin No. 3*, 1911, "Agencies for the Improvement of Teachers in Service."

[2] "Qualities of Merit in Secondary School Teachers," *Journal of Educational Psychology*, March, 1912.

second; by Poor, those ranked last or next to last; by Medium, all others between these two. Because teachers are ranked last or next to last does not necessarily mean that they are really poor teachers. It simply means that of all the teachers with whom they were compared they were least good. It seemed safe to make this classification because in any one quality it is quite likely that one or two teachers would be prominent either for the presence or absence of that quality, while it might be more difficult to distinguish between the others.

In regard to the relation of sex to teaching efficiency we had data on 154 male and 250 female high-school teachers. Comparisons are very slightly in favor of the women. It was possible for 62, or 40 per cent, of the men to rank first or second, and only 14 per cent of them were so ranked; while out of a possible 24 per cent of the women, 16 per cent ranked in the first two classes. The Pearson coefficient, however, shows no relation between sex and teaching efficiency in this body of high-school teachers.

The Pearson coefficient between General Merit and Experience was 0.43 with a P.E. of 0.053. No teacher ranked first or second who had less than 3 years of experience. When the years of experience are grouped by fives and the distribution made we have Table VI.

TABLE VI

Years	No.	Good		Medium		Poor	
		No.	Percentage	No.	Percentage	No.	Percentage
1– 5	160	15	9.3	109	68.1	36	22.6
6–10	138	25	18.1	96	69.5	17	12.4
11–15	65	15	23.0	42	64.6	8	12.4
16–20	29	6	20.6	19	65.5	4	13.9
21–46	28	6	21.4	20	71.4	2	7.2

It is to be noticed that there is a decided falling off in numbers between the second and third groups. Seventy per cent of all are in the first two groups. The increase in efficiency is very great from 1 to 10 years, a little less decided from 10 to 15, and efficiency as indicated by the percentage of good teachers falls off slightly from 15 to 46, but the medium group increases in that time.

The relation of the specific qualities of merit to General Merit is shown in Table VII.

The quality which ranks far above all others is Instructional Skill with its correlation of 0.90. Next in order come Results and Stimulation of Individuals with their coefficients of 0.85 and 0.80, respectively. These three, with Intellectual Capacity 0.71 and Discipline 0.67, seem to be the single qualities deemed most important by supervisors, and are the qualities, perhaps, which are most likely to be determining factors in a high-school teacher's success; all the other qualities, except

TABLE VII

	Rank	r	P.E.	No.
General Merit and Physical—				
1. General appearance	21	0.36	0.059	343
2. Health	22	.18	.062	311
3. Voice	16	.50	.059	343
4. Energy and endurance	15	.51	.059	343
Moral—				
1. Self-control	13	.52	.06	326
2. Sympathy—tact	17	.45	.059	343
3. Adaptability	11	.59	.06	330
4. Sense of humor	19	.44	.059	343
5. Fair-mindedness	18	.45	.062	310
Administrative—				
1. Initiative	9	.62	.06	330
2. Executive capacity	10	.62	.06	330
3. Co-operation	6	.66	.061	320
Dynamic—				
1. Intellectual capacity	4	.71	.06	328
2. Instructional skill	1	.90	.059	343
3. Governmental skill (discipline)	5	.67	.059	343
4. Studiousness	7	.65	.06	328
Achievement—				
1. Success of pupils (results)	2	.85	.059	343
2. Stimulation of individuals	3	.80	.06	325
3. Stimulation of community	14	.52	.066	276
Social Spirit—				
1. Interest in life of school	8	.64	.062	310
2. Interest in life of community	12	.57	.064	289
Experience	20	0.43	0.053	421

General Appearance and Health, show high correlation with Teaching Efficiency. As a group the physical qualities rank lowest and the dynamic and achievement qualities highest. Superintendents are evidently looking for results. It will be noted that Experience ranks third from the last, which may indicate that Experience is not always so important as is maintained. The correlation of the moral qualities and the physical qualities of Voice and Energy are high, but when compared

with the other qualities they seem to be less important. The low correlation of Health indicates either that good teaching is very hard on those engaged in it or that teaching does not attract a very strong class of people into its ranks—or that the disadvantage of relatively poor health may be overcome by exertion.

When we compare these results with those from Ruediger and Strayer's investigation of elementary teachers we find points which tend to confirm the results of both, and yet, if the findings in the two cases can be taken as typical of elementary and secondary teachers, there are differences which show some different conditions in the two.

All of our coefficients of correlation in the present study are higher than the corresponding coefficients of the earlier study. Thus our highest correlation is 0.90, theirs, 0.56; our lowest is 0.18, and their lowest, 0.04. This difference may be due to method of correlation, or to actual difference between the relation of these qualities to Merit in high-school and elementary teachers, though such a great difference is unlikely.

The quality which had highest correlation with teaching efficiency in elementary teachers was Discipline, with Instructional Skill and Initiative ranking second and third. The coefficients of Instructional Skill and Discipline were respectively 0.56 and 0.54 in their study, and 0.90 and 0.67 in the present investigation, showing the much greater relative importance of Discipline in the grades. Health and Appearance ranked lowest with elementary teachers, as they did with high-school teachers.

In the matter of Experience there are some differences, but the results tend to the same conclusion, namely, that Experience is an important factor in modifying teaching ability. No elementary teacher ranked first or second with less than 5 years of experience. Among high-school teachers 3 years was the minimum for good teachers. The average experience of elementary teachers for the first and second classes was 13 years, and for the last two classes 8.5 years. The average experience of high-school teachers for these corresponding groups was 11.8 years, and 6.39 years, respectively. The averages for the totals were 10 years for grade teachers and 8.96 years for those in high school. All of which would seem to show that elementary teachers remain in the profession longer than high-school teachers. This is shown also by the fact that of the elementary teachers 25 per cent had taught less than 5 years, and

26 per cent more than 14 years, while of the high-school teachers 39 per cent had taught 5 years or less, and only 13.9 per cent more than 15 years.

Little direct comparison can be made as to preparation. It is noticed, however, that college graduates are predominantly the best high-school teachers, but are not particularly successful in the grades.

STUDIES OF CAUSES OF FAILURE IN TEACHERS

The problem of relative value of qualities of merit may be approached negatively, that is by a study of teachers' failures. When teachers fail it is likely to be at those points where pressure is greatest. The teacher is weak where she should be strong. Consequently a list of qualities of merit would have a corresponding list of qualities of demerit. A study of failures may be as illuminating as a study of virtues.

We have at hand reports of two such studies—one, of the failures of elementary teachers and the other a like study of high-school teachers. Miss Moses[1] in 1912 obtained from 76 school systems the causes of failure among high-school teachers during the preceding academic year. The classification of causes, together with the frequency of each, appears in Table VIII.

TABLE VIII

Rank	Causes of Failure	Number of Failures	Percentage of Total
1	Poor instruction	43	20.97
2	Weakness of personality	35	17.07
3	Lack of interest in work	30	14.53
4	Weakness in discipline	26	12.68
5	Lack of sympathy	20	9.75
6	Inability to co-operate	14	6.82
7	Unprofessional attitude	12	5.85
	Weakness in knowledge of subject-matter	12	5.85
8	Disloyalty	7	3.41
9	Immorality	4	1.95
10	Poor health	2	0.97
	Total	205	99.85

The qualities lacking in these teachers who failed cannot be compared throughout with the qualities found to be most important by our

[1] *School and Home Education*, January, 1914.

own study of high-school teachers, but where comparison is possible, the order is found to be practically the same.

In a similar manner a study of the causes of failure of elementary teachers by Mr. Sherman Littler[1] parallels the Ruediger and Strayer results reported above. Mr. Littler makes the following partial comparison of the results in the two studies:

Qualities of Merit (According to Ruediger and Strayer)	Reasons for Failure
1. Discipline	1. Poor Discipline
2. Teaching Skill	2. Weak Personality
3. Initiative	3. Lack of Teaching Skill
4. Personality	4. Lack of Interest
5. Studiousness	6. Lazy—No Daily Preparation
6. Follow Suggestions	7. Failure to Co-operate
Last—Health	14. Health

In each study, health seemed to have little weight in determining the success or failure of elementary-school teachers.

Investigations tending to establish in an accurate way the qualities into which teaching efficiency is to be analyzed and the actual relation which each of these qualities bears to teaching merit have been all too few and too limited in scope to be conclusive. The problem is very large and the difficulties in the way of getting exact data are many.

It is easier to point out the needs in this field of investigation than it is to meet them. Some of the fundamental needs for the final solution of the problem are the following:

1. A list of terms in which the various aspects of teaching efficiency shall be expressed, terms which are specific in their meaning and which shall be generally recognized as the categories in which teaching efficiency is best described.

2. These terms must be made exact by careful definition and standardization, so that all who use them intelligently will mean the same thing by them.

3. There must be generous co-operation on the part of a large number of school men who are sufficiently trained to know what teaching must

[1] "Causes of Failure among Elementary School Teachers," *School and Home Education*, March, 1914.

be to conform to the best educational principles and who are able to give exact data.

4. We must have command of situations in which two or more officials may test, on the same body of teachers, whatever method is proposed.

Only under conditions such as these will teaching efficiency be resolved into its elements, the relative value of the various factors be determined, and the problem of measuring the presence or absence of qualities of merit be solved.

CHAPTER III

A METHOD FOR GUIDING AND CONTROLLING THE RATING OF TEACHERS

Objective measurement of educational products and processes has not yet reached the point where we can rely upon such measurements to give us all or even most of the information we need about our teachers. We are still dependent, to a very great extent, on the judgment of supervisors and others whose business it is to have this information. This does not mean that we are to be without exactness in our judgment of teaching efficiency, or that we have to belong to the ranks of those who judge by "general impression." Although the exactness cannot be so great as that of objective measurement, the latter will have its place and there will be, further, the accuracy which comes from thorough analysis, careful observation, exact definition of terms, complete record, and controlled conditions at all possible points. The object of any scheme set up for "measuring" teaching efficiency should be to remove the final result as far as possible from arbitrary personal opinion by controlling the method by which the result is obtained.

A large task confronting us in our study of the problem has been the development of some scheme for getting the necessary information in regard to the general efficiency of teachers and the presence or absence of certain supposed qualities in the same teachers; in other words, the development of a rating scheme which should avoid as far as possible the difficulties enumerated in our discussion of rating schemes.

The main considerations in the construction of a rating scheme are (1) selection of factors on which a teacher is best judged, (2) careful definition of terms, and (3) the best method of scoring the judgments.

Choice of terms for judging teaching efficiency.—In choosing the qualities of merit which should form the basis of our analysis of the teacher's efficiency, the following points were held in mind:

1. The topics must not be too few, for either they will be so general that little analysis is made, or, if not general, they will be sure to leave out important points.

2. On the other hand, the list must not be so long as to be cumbersome and a great burden to those who are called on to rate teachers.

3. The qualities must be of the greatest possible suggestiveness, both to supervisors and to teachers. The scheme must direct the attention of the supervisor to the really vital factors of the situation so that he cannot be deceived by any display of nonessentials. The attention of the supervisor should be directed also to the pupils and not alone to the teacher.

4. The terms should set up for the teacher a standard by which to measure her own work, and give her ideas for self-improvement. By helping her to be properly self-critical, they should prepare the way for supervisory criticism and make her willing to receive helpful suggestions. The list should help the teacher also by giving her definite ideas as to what is expected of her by the supervisory staff.

The list of qualities chosen for this study and displayed in the score card reproduced herewith (see Fig. 1, p. 44) does not pretend to be a perfect list, either in statement or in completeness; it has no doubt left out factors which others would include and included some which others would leave out. It has been reduced somewhat arbitrarily from a much longer list gathered from many sources. It has avoided as far as possible vague, general, and all-inclusive terms, such as "personality" and "scholarship." The terms are as specific and exclusive as they could be made. They are not more numerous than seemed to be necessary to include points on all aspects of the teacher's life and work.

The items have been organized under five heads which tend to make the terms more meaningful. The first group, "Personal Equipment," includes certain of the teacher's physical, mental, and moral qualities, personal qualities which might be factors of success in many callings but which are here to be considered in their relation to school activities. Group II, "Social and Professional Equipment," is meant to cover qualities particularly important in the social situation involved in the school, both as related to the children and community and as related to the profession. "School Management" has to do with the mechanical and routine factors of the teacher's schoolroom work, as indicated by her care of the room, handling of classes, and the like. The fact that *Discipline* is placed under this head does not mean that discipline is considered to be a purely mechanical process. A place might have been made for it in Group IV and Group V but it seemed to belong most logically to the management phase of the teacher's work.

Efficiency Record

Teacher Miss E. (indicate sex) City XXV (or building) Grade taught III (or subject)

Experience 2 years. Salary $57.50 per month.

Highest academic training College graduate

Extent of professional training Pedagogical courses in college: for H. S. teaching.

DETAILED RATING		V. P.	Poor		Medium			Good		Ex.
I. *Personal Equipment*—	1. General appearance							X		
	2. Health				X					
	3. Voice						X			
	4. Intellectual capacity							X		
	5. Initiative and self-reliance			X						
	6. Adaptability and resourcefulness			X						
	7. Accuracy									X
	8. Industry								X	
	9. Enthusiasm and optimism					X				
	10. Integrity and sincerity								X	
	11. Self-control					X				
	12. Promptness							X		
	13. Tact					X				
	14. Sense of justice							X		
II. *Social and Professional Equipment*—	15. Academic preparation							X		
	16. Professional preparation				X					
	17. Grasp of subject-matter					X				
	18. Understanding of children			X						
	19. Interest in the life of the school						X			
	20. " " " " " " community					X				
	21. Ability to meet and interest patrons				X					
	22. Interest in lives of pupils						X			
	23. Co-operation and loyalty							X		
	24. Professional interest and growth							X		
	25. Daily preparation							X		
	26. Use of English								X	
III. *School Management*—	27. Care of light, heat, and ventilation						X			
	28. Neatness of room							X		
	29. Care of routine	X								
	30. Discipline (governing skill)	X								
IV. *Technique of Teaching*—	31. Definiteness and clearness of aim			X						
	32. Skill in habit formation		X							
	33. Skill in stimulating thought					X				
	34. Skill in teaching how to study			X						
	35. Skill in questioning				X					
	36. Choice of subject-matter		X							
	37. Organization of subject-matter		X							
	38. Skill and care in assignment		X							
	39. Skill in motivating work			X						
	40. Attention to individual needs						X			
V. *Results*—	41. Attention and response of the class	X								
	42. Growth of pupils in subject-matter		X							
	43. General development of pupils					X				
	44. Stimulation of community			X						
	45. Moral influence				X					
GENERAL RATING			X							

Recorded by ——— Position Supt. Date 1/15/15.

FIG. 1.—Individual record showing application of proposed method of rating teachers.

EXPLANATION OF TERMS USED IN SCORE CARD SHOWN ON OPPOSITE PAGE

I. *Personal Equipment* includes physical, mental, and moral qualities.
   1. *General appearance*—physique, carriage, dress, and personal neatness.
   3. *Voice*—pitch, quality, clearness of schoolroom voice.
   4. *Intellectual capacity*—native mental ability.
   5. *Initiative and self-reliance*—independence in originating and carrying out ideas.
   7. *Accuracy*—in statements, records, reports, and school work.
   10. *Integrity and sincerity*—soundness of moral principles and genuineness of character.
   13. *Tact*—adroitness, address, quick appreciation of the proper thing to do or say.
   14. *Sense of justice*—fairmindedness, ability to give all a "square deal."

II. *Social and Professional Equipment* includes qualities making the teacher better able to deal with social situations and particularly the school situation.
   15. *Academic preparation*—school work other than professional. Adequacy for present work.
   16. *Professional preparation*—specific training for teaching. Adequacy for present work.
   17. *Grasp of subject-matter*—command of the information to be taught or the skill to be developed.
   18. *Understanding of children*—insight into child nature; sympathetic, scientific, and practical.
   22. *Interest in lives of pupils*—desire to know and help pupils personally, outside of school subjects.
   23. *Co-operation and loyalty*—attitude toward colleagues and superior officers.
   24. *Professional interest and growth*—effort to keep up to date and improve.
   26. *Use of English*—vocabulary, grammar, ease of expression.

III. *School Management* includes mechanical and routine factors.
   29. *Care of routine*—saving time and energy by reducing frequently recurring details to mechanical organization.
   30. *Discipline (governing skill)*—character of order maintained and skill shown in maintaining it.

IV. *Technique of Teaching* includes skill in actual teaching and in the conduct of the recitation.
   31. *Definiteness and clearness of aim*—of each lesson and of the work as a whole.
   32. *Skill in habit formation*—skill in establishing specific, automatic responses quickly and permanently; drill.
   33. *Skill in stimulating thought*—giving opportunity for and direction in reflective thinking.
   34. *Skill in teaching how to study*—establishing economical and efficient habits of study.
   35. *Skill in questioning*—character and distribution of questions; replies elicited.
   36. *Choice of subject-matter*—skill with which the teacher selects the material of instruction to suit the interests, abilities, and needs of the class.
   37. *Organization of subject-matter*—the lesson plan and the system in which the subject-matter is presented.
   39. *Skill in motivating work*—arousing interest and giving pupils proper incentives for work.
   40. *Attention to individual needs*—teacher's care for individual differences, peculiarities, and difficulties.

V. *Results* include evidence of the success of the above conditions and skill.
   41. *Attention and response of the class*—extent to which all of the class are interested in the essential part of the lesson and respond to the demands made on them.
   42. *Growth of pupils in subject-matter*—shown by pupils' ability to do work of advanced class and to meet more successfully whatever tests are made of their school work.
   43. *General development of pupils*—increase in pupils' ability and power along lines other than those of subject-matter.
   44. *Stimulation of community*—effect on life of the community tending to improve or stimulate its various activities.
   45. *Moral influence*—extent to which the teacher raises the moral tone of the pupils or of the school.

"Technique of Teaching" is a group of factors ordinarily lumped together in the term "instructional skill." A consideration of principles of method reveals the fact that instructional skill is not a simple thing but is an inclusive name for many kinds of skill. A teacher may be strong in some kinds of teaching and weak in others. Moreover, this is the point where teachers are likely to be helped most by an analysis of their activities. Our analysis attempts to bring out some of these phases of teaching technique.

The first four groups of qualities consider the native ability, preparation, social qualities, and technical skill which the teacher puts into the work. The fifth, "Results," considers the effect of these things on the lives and development of the pupils. Some of the items here are more general than we should like. If a teacher is teaching several subjects it is likely that the pupils are making more progress in some subjects than in others. A superintendent wanting to get at the facts more accurately might break up the topic "Growth of pupils in subject-matter" into growth in specific kinds of subject-matter. "General development of pupils" expresses inadequately an important item in the teacher's results. Besides growing in knowledge of subject-matter and in skill in school arts, pupils are changing for better or worse in many other ways, such as ability to work independently, ability to deal with social situations, ability to study, personal habits, and the like. All of these are combined loosely in our term "General development of pupils."

Definition of terms.—It is of the greatest importance that the terms used be understood by all who use them. The rating is practically useless if the one rated, the one reporting, and the one afterward using the report have different things in mind as the meaning of the various qualities. Moreover, one to whom a term suggested much would be more critical of the teacher's standing in that respect than one to whom it suggested little. In order that all might, as far as possible, have the same full meaning, a page of "Explanation of Terms" has been placed opposite the "Efficiency Record," for easy reference. Those terms which did not seem to carry their own meaning completely have been defined or elaborated here. These explanations have been made as brief as is consistent with clearness, in order that reference from equality to explanation might be as easy as possible. Not all the terms have been defined, for in some cases the terms appear to carry their own meaning with sufficient completeness. It would be possible, and per-

haps desirable, to have a greater amount of suggestive material under this head.

Recording the judgment.—The method of recording the rating officer's judgment will have much to do with the effectiveness of the scheme. The mere clerical labor of making a large number of reports is enormous and should be reduced to a minimum. The scheme should make the recording of the judgment as easy as possible by eliminating all unnecessary details of writing and expression.

The record should be of such a character that degrees of excellence can be easily expressed. This should be so clear that comparisons of different qualities in the same teacher and of the same quality in different teachers can be made without difficulty.

The terms in which the degrees of excellence are expressed should be reducible to a single term to indicate a "success grade" for the teacher, if desired.

The record should permit quick and easy analysis so that the teacher's weak and strong points would appear at once.

For these reasons, the method of recording the judgment should be as objective and "visible" as possible. The judgment must be made to stand out clear-cut, comparable, and as meaningful as may be.

We have seen in an earlier part of our study the difficulties involved in the methods of record commonly used. These methods do not seem at all capable of meeting the demands we have just set down.

The form of expression which is most likely to suit our needs and express adequately such a complex fact as a teacher's efficiency is that of graphical representation. It is possible to express easily, by means of a curve, many things that could be expressed in words with the greatest difficulty. The value of the graphical method will be apparent as we proceed.

A graphical method of recording judgments.—As will be seen from the score card reproduced on p. 44, there is opposite each quality a scale on which the degree of excellence is expressed by the distance measured along the line from the base.

In order to facilitate the placing of a teacher along this line and—what is equally important—to control the placement to some extent, it seemed wise to make a fivefold division of our scale. These five divisions are called, beginning at the left, Very Poor, Poor, Medium, Good, and Excellent. Contrary to the practice of most rating schemes which rate

teachers on a fourfold scale, we used five divisions in order that there might be a Medium and the possibility of differentiation into those Good and Excellent in the group above medium, and into Poor and Very Poor in the group below medium. It should be easy to place a teacher in one of these five classes with respect to any quality, whereas the placement in a scale of many divisions, without such control, might be confusing and uncertain.

The size of the divisions is suggested by the curve of probability. If we had a very large number of teachers classified with respect to any one quality, we should expect to find the largest number medium, not so many good or poor, and still fewer excellent or very poor. The exact number falling in each division would depend on our arrangement of the limits. Various investigators have proposed different percentages for these divisions. We give here the number out of 100 recommended by Professors Meyer,[1] Dearborn,[2] and Cattell,[3] as proper for each division of Very Poor, Poor, Medium, Good, Excellent.

	Very Poor	Poor	Medium	Good	Excellent
Meyer	3	22	50	22	3
Dearborn	2	23	50	23	2
Cattell	10	20	40	20	10

We have chosen the more liberal and more easily applied division of Cattell for our division of the scale. We have divided the line into ten equal spaces arranged in five groups of 1, 2, 4, 2, and 1 spaces each.

A supervisor's first judgment, then, with respect to a teacher's standing in any of the qualities indicated, must be to determine the class in which she should be rated for that quality.

Within the class there is further opportunity for differentiation. Thus, if a teacher is Good in any quality but nearly Excellent, the mark for that quality will go in the space near the Excellent division; if the teacher is barely Good in the quality considered, the mark will be placed in the space next to Medium.

[1] M. Meyer, "The Grading of Students," *Science*, N.S., XXVIII, 243.

[2] W. F. Dearborn, "School and University Grades," *Bull. of Univ. of Wis. No. 36*, 1910.

[3] J. McK. Cattell, "Examinations, Grades and Credits," *Pop. Sci. Mo.*, LXVI, 367.

The instructions accompanying each efficiency record are as follows:

INSTRUCTIONS

1. Before filling out the record, read the "Explanation of Terms" on p. 3.

2. Opposite General Rating and opposite each quality of merit is a scale on which may be indicated all shades of judgment from Very Poor to Excellent. Place a small cross (×) in that space which indicates your judgment in each case.

EXAMPLE

Qualities of Merit	V.P.	Poor		Medium				Good		Ex.
General appearance...							×			
Health.....		×								
Voice.....					×					

The crosses indicate that in general appearance the teacher is judged to be Medium but nearly Good; in health Poor bordering on Very Poor; in voice Medium.

3. *General Rating* is your estimate of the general merit of the teacher based on your knowledge of her work. It is to be recorded *after* making the detailed rating. Very Poor general rating means that the teacher is practically a failure and not worthy of retention. Poor general rating means that the teacher is unsatisfactory and below the average for that place but still usable. Medium means average merit for the position held. Good means above the average. Excellent means very superior.

4. *Detailed Rating:* Each quality is to be judged on its own basis without reference to other qualities. Your mark will express your judgment as to the degree of presence or absence of merit in the teacher with reference to the quality in question. A mark of Very Poor in any quality means extreme lack of merit as far as that quality is concerned. Poor means unsatisfactory and below the average. Medium means satisfactory or average merit in the quality. Good is above the average. Excellent is very superior.

5. Each judgment should be the result of careful thought based on actual observations. If doubt is felt as to the correctness of any judgment, record it with a question mark (?) instead of with the cross (×). If you can express no opinion as to any quality, make a note of the reason. This is important.

6. Note the questions on p. 4.

The questions referred to were designed to bring out the effect of the blank on the judgment of the one using it, and also any criticisms that he might have in mind.

Application of the blank to an individual case.—How the scheme just described operates is best shown by referring to an actual record such as that reproduced on p. 44, Fig. 1. This report displays the superintendent's analysis of this teacher and shows very clearly the components of her efficiency, in his estimation. Miss E's General Rating is given as Poor and an examination of her Detailed Rating confirms this judgment. In most particulars she is quite satisfactory and even above the average. Her academic preparation is very good but her professional training is limited and not adapted to the third grade. She is still inexperienced and has therefore not had her understanding of children and her technique developed. This fact and her lack of routine probably account for her very poor discipline and inattentive class. We must be careful not to infer too much, but these relations seem clear. On the basis of the personal, social, and professional equipment alone, it would be possible to write for this teacher an excellent recommendation, but when all the facts are scrutinized, one's opinion of her teaching efficiency is very much lowered. She must be set down as a poor teacher but one who has possibilities of being a good teacher.

Reduction of the rating to a single term.—The General Rating is the rating officer's own judgment of the teacher's general merit recorded *after* filling out the Detailed Rating. It is not determined mathematically but is the officer's mental summation of the qualities on which he has just passed judgment. As the record stands, it indicates nothing as to the relative value of the various qualities. It simply allows for judgment on each quality and indicates general merit by the location of the resulting "curve." We may resort to other means, however, to get the general result.

The Median: Taking our individual case again (Fig. 1), it will be noticed that 3 qualities fall in column 1, 5 in column 2, 7 in column 3, and so on until the 45 qualities are placed. The Median or middle point of this distribution falls in column 5 and is 5.03, 30 per cent higher up the scale than the superintendent's judgment.

The Average: If we multiply the number of each column by the number of qualities falling in it and divide the sum of these products by 45, we have the average of the distribution. In this case it turns out to be 5.02.

It will be seen at once that these two methods of determining the general merit grade are based on the assumption that all the qualities

are of equal value, which, of course, they are not. It is obvious that some of these qualities should have more consideration than others in determining the teacher's general merit.

These methods are most liable to error when the qualities are scattered as in the case of our illustration. In such a case some points are rated so low that the teacher is obviously poor, yet so many qualities are rated high that the Average and Median of their distribution are raised to a point which would make the teacher seem to be quite satisfactory. There would be little or no error if the qualities all fell into one column or were distributed to only two or three columns close together; that is, supposing our list of qualities is itself satisfactory as a basis for judging teaching efficiency.

It is necessary that the qualities be weighted in proportion to their importance if a mathematically determined success grade is to be true. The relative importance of the qualities of merit here considered is a point on which we hope to have some light as a result of the information gathered by this method of rating.

Before taking up this important point, let us see what the nature of our information is, how reliable it is, and how well our proposed method really guides and controls the rating of teachers.

CHAPTER IV

TESTS OF THE PROPOSED METHOD

Any conclusions to which we may come later in regard to the relative importance of the various qualities of merit and in regard to other problems involved are based on the experience and work of between 40 and 50 school men and women who have tried out and criticized for us the scheme just described. In the correlations to be discussed later, ratings of 424 teachers from 39 schools were used. These 39 schools were representative of 27 cities, all but 8 of which are in Illinois. They represent populations varying in size from less than four thousand to two million. The smallest number of ratings used coming from one source was 5, the largest number was 25. Most of the officials co-operating with us contributed about 10 ratings each. Their work was quite voluntary and very generously given because of their interest in the problem. The only cases in which the ratings may not have been voluntary were those of principals in one city who were asked by their superintendent to rate their teachers for us. Twenty of the rating officers were superintendents and 19 of them principals. Ten of the latter were women.

Ratings of whole schools by single judges.—Typical results obtained when a body of teachers is rated by one officer are shown in Figs. 2 and 3. Each figure displays the ratings of the Best teacher in the given group, the Poorest of the group, and the Median made up of the middle points of the whole number of ratings for each quality. Thus in Fig. 2 the best teacher, Miss S., is marked Poor in General Appearance, while the poorest, Miss M., is rated a low Medium. The Median of the 19 teachers with respect to General Appearance is Good, which means that there are at least as many teachers rated Good or Excellent in General Appearance as there are teachers rated below. The teacher called Best is called so because she received the highest General Rating, or, if more than one received the same high General Rating, because she had the highest Median Rating (see chap. iii). Similarly, the one called Poorest was rated lowest. The Best and the Poorest in each case are the upper and lower limits as far as general merit is concerned but their ratings in detail are not always the extremes. Thus in Fig. 2 both are below

Median in General Appearance (quality 1), both are above Median in Professional Interest and Growth (24), and Best ranks below Poorest in Professional Preparation (16). The Median curve represents the central tendency of the group as a whole.

Both of these sets of curves show clearly that, as we naturally expect, Good and Poor teachers are more distinguishable in some qualities than in others. In some cases the Good and Poor curves are quite divergent from each other and from the Median. In others there is much confusion. Fig. 2 shows more clearly than does Fig. 3 the fact that the Good and Poor curves diverge more in those qualities from Discipline down than in the personal and social qualities in the upper part of the schedule. This is quite generally the case. The qualities in these upper sections which usually show divergence are Initiative (5), Adaptability (6), Grasp of Subject-Matter (17), and Understanding of Children (18).

There is shown a tendency toward greater liberality of judgment in the first two groups of qualities than in the last two. The Median or group curves tend to the right in the upper part of the score card. This is especially noticeable in young teachers, as in the case of our example in Fig. 1 (chap. iii). Young teachers may be quite well equipped personally and socially, but only experience, practice, and training can develop their understanding of children and their technical skill. It is also possible for older teachers to be held in high esteem for their personal qualities and yet be marked low for other and more technical reasons.

Ratings by judges at different times.—It is important to know whether these results are accidental or whether a rating officer would get the same record a second time, without referring to the first result. A number of our correspondents have been willing to rate their teachers for us a second time and the results in two cases are given in Fig. 4. Principals of Schools IV*c* and IV*e* rated their teachers in May and again in the following December. The curves in Fig. 4 are, as indicated, the records of the Best and Poorest teachers in these two schools at these two times. The principals did not have the first records at hand for reference.

In School IV*e* the two ratings of the Best teacher are identical with the exception of one item, Health, which is lowered one point. The second rating of the Poorest teacher follows the first very closely in spite of its scattered character. The December rating raises the detailed rating in 26 points, is identical with that of May in 11 points, and lowers

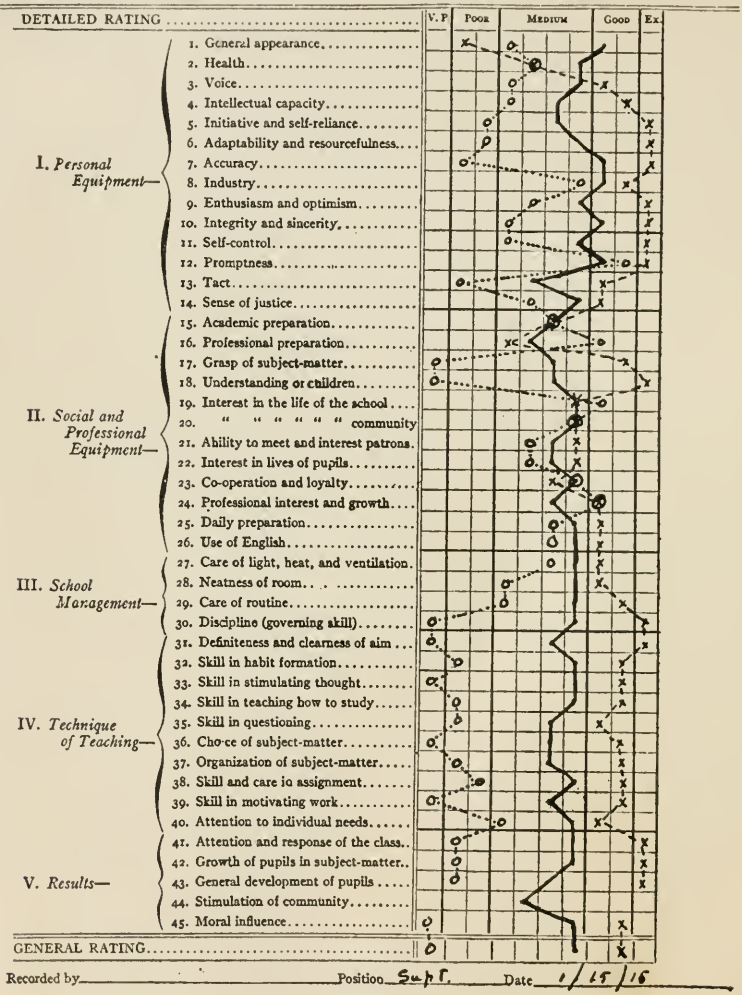
Efficiency Record

Teacher Best-Miss S. ; Poorest-Miss M. (indicate sex) City XXV (or building) Grade taught B. 4th ; P. 1st (or subject)

Experience B. 10 ; P. 6 years. Salary B. $70 ; P. $57.50 per month.

Highest academic training B- High School ; P- High School

Extent of professional training B- 2 Summer Terms ; P- Normal Graduate.



Recorded by _____ Position Supr. Date 1/15/16

FIG. 2.—Summary of records from School XXV

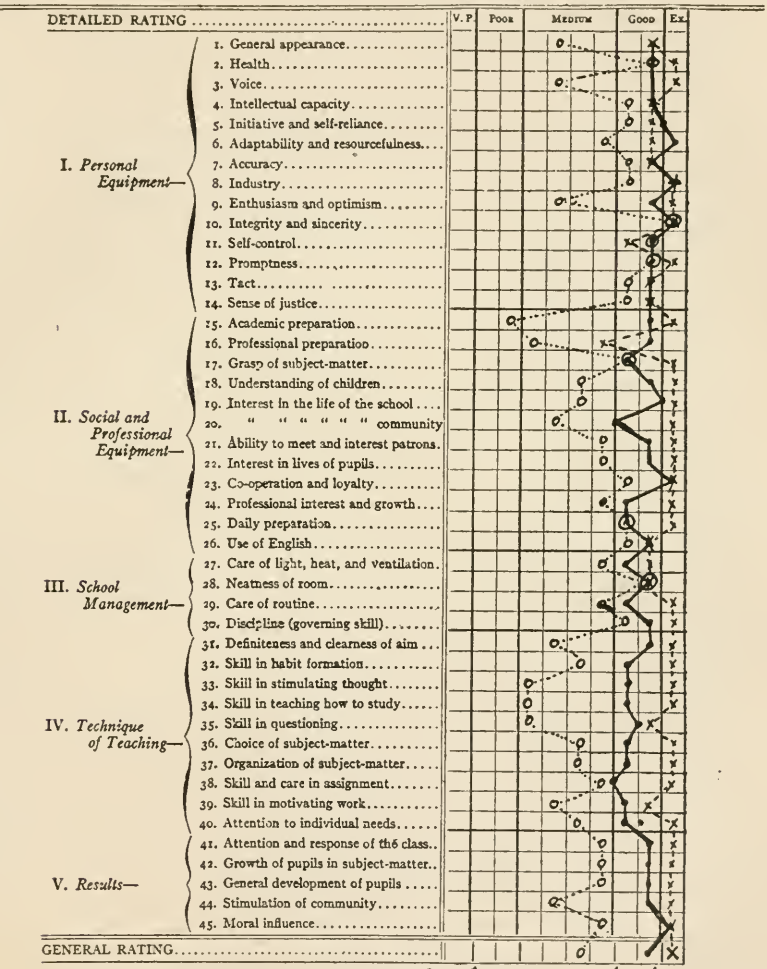
Efficiency Record

Teacher Best-Miss J. Poorest-Miss C. (indicate sex) City XXVI (or building) Grade taught B-7th; P-2 (or subject)

Experience B-3; P-12 years. Salary B-$65; P-$75 per month.

Highest academic training B-High School + College; P-High School.

Extent of professional training B-; P-Summer courses.



Recorded by ——— Position Supt. Date 1/21/15.

FIG. 3.—Summary of records from School XXVI

it in 8. Notwithstanding the general upward tendency of the second record, the second General Rating is one point lower than the first. This is probably due to the fact that the first General Rating is too high to be consistent with the details. The changes downward, in items 4, 15, and 16, are obviously due to change in the principal's judgment, as these qualities could not have changed as they are recorded to have changed.

The records from School IV*c* show considerable downward revision in the case of the Best teacher and upward revision in the case of the Poorest. There is no change in the General Ratings. Here, as in School IV*e*, we find a downward change of the estimate on Academic and Professional Preparation, a change which could not be made. Discrepancies like this, and other changes which are not due to actual differences in the teacher judged, can no doubt be very largely overcome by practice and by greater clearness in the mind of the judge as to what he means by the various grades of excellence in these particulars.

Ratings of teachers by two or more judges.—The most important test of any rating device is its ability to bring the same result when a teacher is rated by two or more judges. It is very improbable that two judges of a teacher would see and record merit or lack of it in exactly the same way. Variation is to be expected in this as in the use of every other measuring device, but we should know how much variation to expect and how much it may be reduced by practice. To obtain control of situations giving us ratings of a teacher by more than one judge has been nearly impossible. Our scheme has therefore not been tested as severely in this way as is desirable.

This phase of our problem can best be solved by city superintendents with corps of supervisors and long periods of time at their command.

The superintendent of School XL secured for us the co-operation of some of his supervisors in rating a number of his teachers. The records of two of these teachers as given by three judges each are shown in the accompanying Fig. 5. Teacher A was rated by the superintendent, the supervisor of elementary grades, and a general supply teacher. Teacher B was rated by the superintendent, the supervisor, and her principal.

An examination of Fig. 5 will show very great agreement among the three judges in these cases. At one point (28) in A, there is a divergence of four spaces, but very few differences are more than two spaces. In the cases of two other teachers not shown here, the supervisor gave ratings of Good, while a general supply teacher in one case

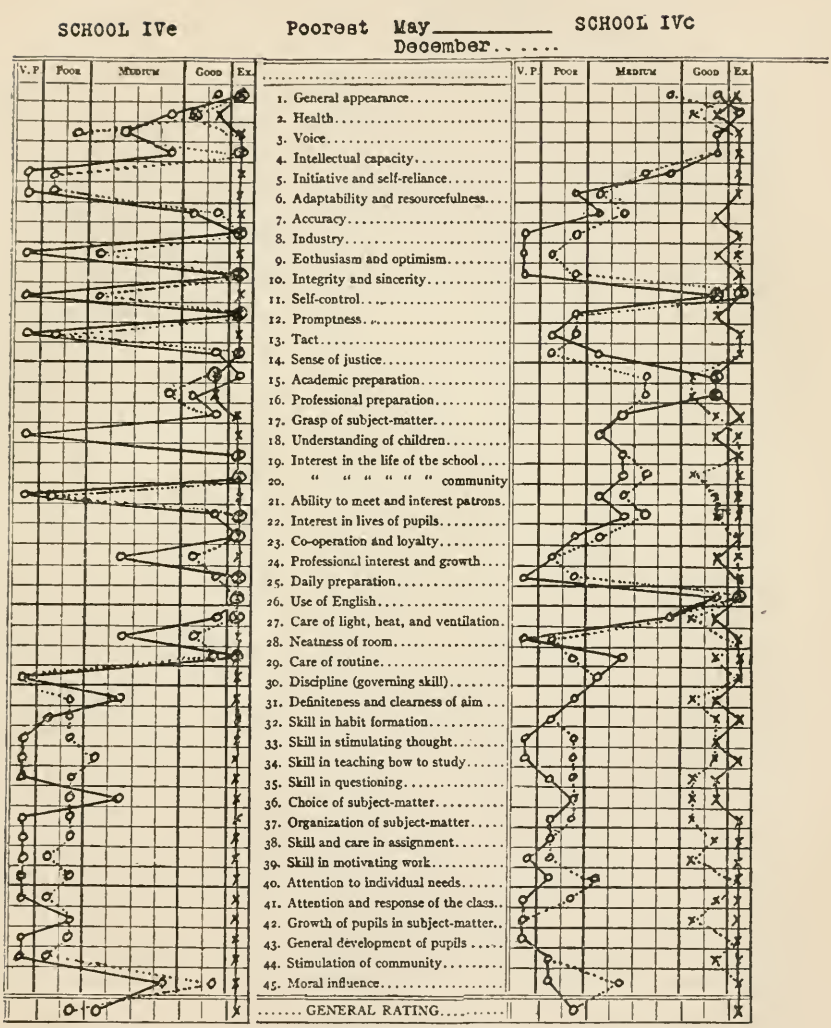


FIG. 4.—Ratings made at different times

Efficiency Record

Superintendent ————
Supervisor . . . . . .
Third Judge - - - - - - - - -

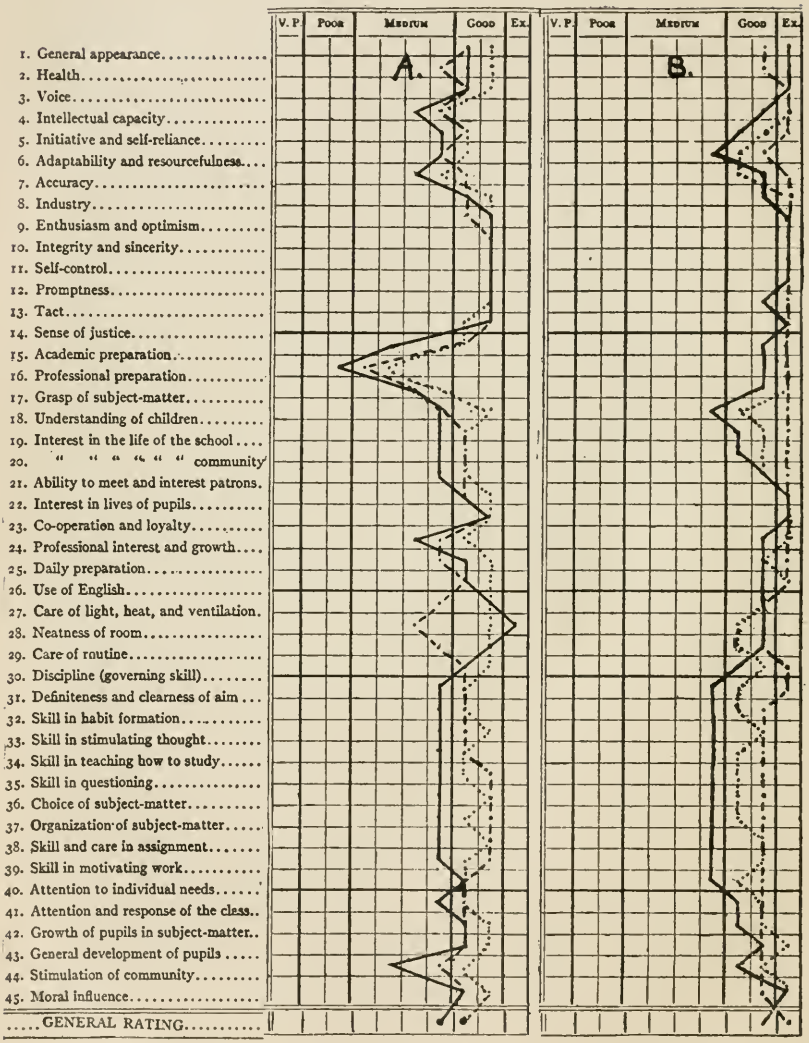


Fig. 5.—Ratings of two teachers A and B by third judge

and a principal in the other gave ratings of Medium, a difference of three spaces in General Rating, and larger differences in many details. Through another means we were able to obtain incomplete ratings of a teacher from officers in three different towns where she had taught. These ratings are liable to error owing to lapse of time, but notwithstanding that, they agree within one space as to General Rating, placing her at high Medium or Good, and within five spaces in detail. Judgments are likely to differ from one class of excellence to another adjoining, such as from Medium to Good or Medium to Poor, or from Good to Excellent, but seldom from Good to Poor or farther.

Differing standards of excellence.—One of the largest complicating factors preventing exact and comparable results is the difference of standards of excellence in the minds of the judges. A teacher who ranks Excellent in one officer's mind is found to rank only Good or perhaps Medium in the rating of another judge who is more critical and less easily satisfied. We find numerous examples of this difference in standards in the ratings at hand. In Fig. 5, just reviewed, the superintendent is more critical of A and B than are the other two rating officers. In Fig. 6 we have the same thing shown in a larger way. Fig. 6 compares the best, poorest, and median (or group) records from two schools in the same city. It is not likely that in this city of 24,000 there is any great difference in the ability of the teaching body from school to school. We are assured by the superintendent that there is no reason to think that the teaching force of one school is much better or worse than that of another. Any striking differences found are in all probability due to difference in standards of excellence held by the principals. The principal of School XXI*a* rates her eight teachers high, one being Excellent, six Good, and one a high Medium. As a group her teachers are very good. The principal of School XXI*c* has rated his thirteen teachers much lower, one being Excellent, one Good, ten Medium, and one Poor. The group curve falls in the Medium column 40 to 50 per cent lower than Principal XXI*a*. It is obvious that Principal XXI*c* is much more critical than Principal XXI*a*. The reason for this is perhaps explained by the training and experience they bring to this work of judging teachers. Principal XXI*c* is a man with six years of experience besides being a normal graduate and having a year of university study along professional lines. Principal XXI*a* is a woman with an experience of twenty-nine years and little or no professional training.

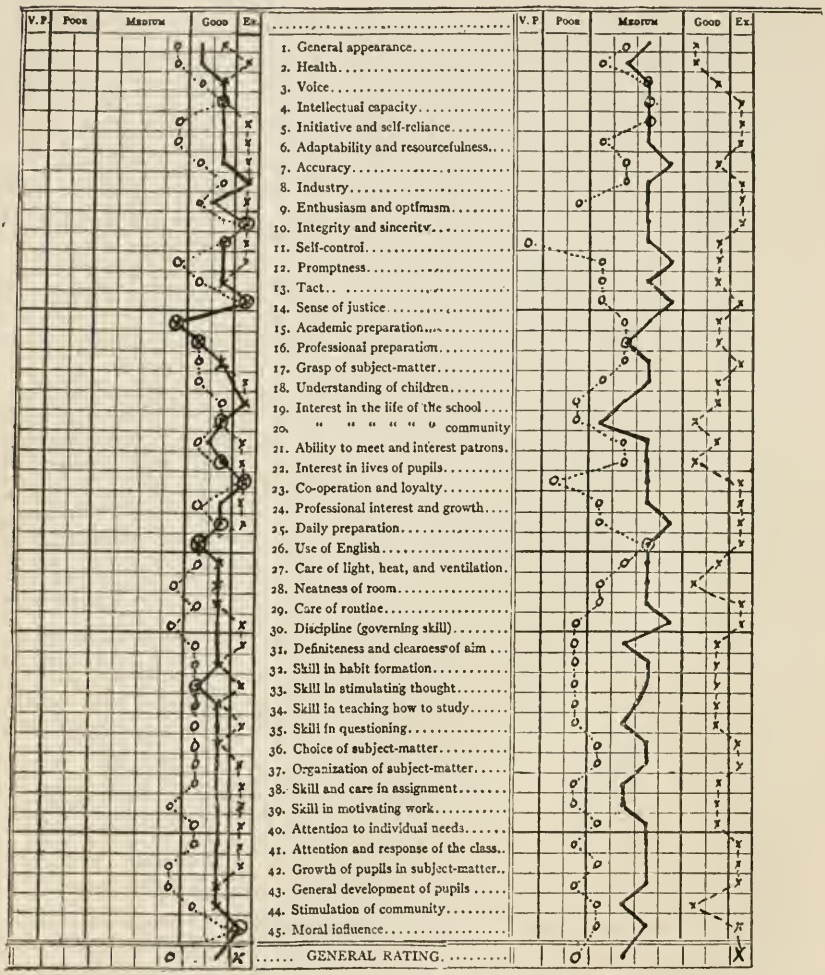


FIG. 6.—Summary ratings from Schools XXI*a* and XXI*c*

Differing abilities to discriminate.—These curves of Fig. 6 illustrate equally well another difficulty in the way of obtaining comparable data, namely, the unequal abilities of school officers to discriminate between teachers as to their merit in the various items of our schedule. If the ratings for School XXI*a* are true in all respects, that body of teachers is remarkably good and remarkably uniform. It is probable, however, that the records of School XXI*c* are nearer the truth.

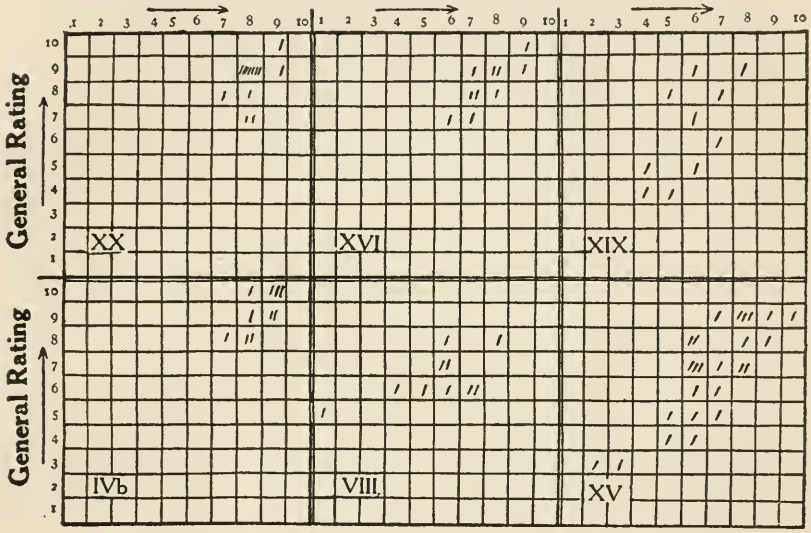


TABLE IX.—Combined General Ratings and ratings in Skill in Questioning showing differing amounts of discrimination in six schools. (General Ratings run from bottom to top in each square. Ratings in the quality run from left to right.)

Difference in discrimination is shown not only in regard to general merit but in regard to each quality. As we shall point out later, more discrimination is to be expected in some qualities than in others, but in any one quality there is wide variation in ability to see differences.

This is shown graphically in Table IX, where the ratings for Skill in Questioning and the General Ratings are combined in the cases of six different schools. In School IV*b*, the ten teachers are Good in Skill in Questioning. The thirteen teachers of School XX range from Excellent to Medium in general merit, but are confined to Good except in one

case. School XV shows wide variation both in general and in the particular quality. The superintendent in School VIII gives his teachers General Ratings of Good or Medium but ratings in Questioning Ability ranging from Good to Very Poor.

The chief conclusion to be drawn from this discussion of differing standards and unequal abilities to discriminate is that, if the ratings in any city are to be uniform from school to school and used as a common basis for comparison, the officers making the ratings must be trained to a common standard of excellence and brought to a common basis of discrimination. As rating of this kind is now done it is as much an indication of the ability of the rating officer as it is a measure of the ability of the teacher. Greater mutual understanding, and more information and practice will do much to reduce the discrepancies found in these records and make them more truly measures of teaching efficiency.

How the blank controls the rating.—Many rating schemes have failed and have been discarded because after a few years all grades were raised to the point where no discrimination was shown. The rating scheme must control this factor and prevent the raising of the success grade from year to year unless real improvement is shown. In the scheme here proposed, the rating officer is required to pass judgment on separate items, one by one, and rate them as Very Poor, Poor, Medium, Good, or Excellent. The judge cannot very well give a high general grade for poor ability, for either he must misrepresent the teacher all along the line, or have his General Rating inconsistent with the details.

The extent to which the principals and superintendents who have tried this blank have been influenced and controlled by it in their final rating is best shown by their answers to our question: "Did filling out this record modify your previous opinion of this teacher? If so, how?"

When the officers were in the habit of rating their teachers the blank did not change their general opinion to any extent. They say, however, that filling out the record particularized their judgment. The cases in which judgments were lowered and those in which new points of excellence were found, are about equal. Some of the answers to our question are as follows:

"Careful thought necessitated, showed up faults."

"Lowered opinion."

"Made factors of judgment more definite and certain."

"Strengthened opinion; led to closer analysis."
"Lowered opinion three points."
"Raised rating."
"Made rating more definite."
"Gained more definite detailed knowledge."
"Made me realize her possibilities."
"Discovered good points."
"Points of excellence not realized before."
"Rated him higher than before."
"Detailed attention to III, IV, and V depreciated opinion of her."
"Previously gave too much attention to minor points."
"General impression was more favorable than analysis justified."

These quotations and others which we might give indicate plainly the unreliability of general impressions and unanalyzed judgments. The judgment may be raised or lowered by a closer study of the teacher, but in either case the previous judgment was not correct and would have been an injustice to teacher and school.

Difficulties in filling out the record.—As our blank was first constructed, it had twenty spaces in the scale instead of ten. The number was reduced because of the difficulty rating officers felt in choosing among so many. There were more choices possible than they could distinguish. Definition of Excellent, Good, Medium, Poor, and Very Poor in General Rating and Detailed Rating has also helped eliminate doubt from the minds of the judges as to where on the scale the teacher should be placed. Our definitions of these terms have, of necessity, been of a most general character. Detailed definition of what is Excellent, Good, Medium, Poor, and Very Poor, General Appearance, or Skill in Questioning, or Growth of Pupils in Subject-Matter, or other particular qualities would be very difficult and tedious in any circumstances and quite impossible within the limits of a score card.

There was difficulty in applying all the terms to all situations. For instance Stimulation of Community is hard to apply in the city where teachers may scarcely touch the community outside the school. In a small town this item would be more important.

More frequent is the difficulty of applying all items to all grades in the same school. Thus principals sometimes hesitate to grade primary teachers on Teaching How to Study and on Assignment when little or no formal study is done. Likewise teachers of manual arts have little to do with study and assignments as ordinarily understood.

A much greater source of difficulty has already been mentioned in our discussion of differing abilities of the judges to discriminate between teachers. This lack of discrimination is due in largest measure to actual ignorance on the part of the rating officer, first as to what constitutes excellence in many of the aspects of teaching, and second, as to what the teachers are actually doing. In response to our request to note any difficulties in filling out the record, Technique of Teaching is set down most often as the set of qualities most difficult to judge. There is little hesitancy or uncertainty in expressing opinion about the teacher's personal or social qualities.

Some of the principals excuse themselves on the ground that they do not have sufficient time for observation, and this may very well be true in the cases of those who do regular teaching work.

Objection has been raised to the large number of points to be considered. On the other hand, additional points have been urged. It is probable that the list here tested is as long as it ought to be if the convenience and limited time of judges are considered. At the same time it would be difficult to reduce the list if it is to be a basis for self-criticism on the part of the teacher and a method of helping her in detail. As was said in another connection, if the General Rating were the only purpose accomplished, a shorter list would be sufficient.

The time required to fill out each individual record is variously given as from 5 to 45 minutes. The usual amount of time required is about 15 minutes, after the information has been gathered. After a principal or supervisor has worked with a teacher for some months and has had many opportunities for observing her with regard to the points here enumerated, all of which is in his daily line of duty, it should not be at all difficult for the officer to fill out the record in 10 minutes. This does not seem to be an excessive amount of time to give to this important and delicate work.

SUMMARY

1. The ratings shown in this chapter, and others which we have at hand, show clearly the possibility of expressing by the graphical method all shades of excellence and all combinations of specific kinds of excellence in teachers.

2. With slight variations, principals are able to get the same result at two different times without reference to the first record made.

3. Different judges of the same teacher are able to obtain results varying from each other less than three spaces of the scale.

4. Comparability of ratings from different schools is lessened by differing standards of excellence from school to school and by differing abilities to discriminate on the part of school officers.

5. If results from different schools are to be made thoroughly comparable the judges of teachers must be trained to a common standard of excellence and be given a common fund of knowledge as to what constitutes excellence in teaching.

6. Tests show that the use of an analytical blank of this kind may raise or lower judgments previously formed. General impressions and unanalyzed judgments are not reliable.

CHAPTER V

RELATIVE IMPORTANCE OF QUALITIES OF MERIT

The problem.—The rating device which we have described in the preceding chapter was designed primarily to obtain for us information on which to base an accurate estimate of the value of the qualities of teaching merit there set forth. Our idea has been to make it as easy as possible for school officials to give us correct information. The rating officer is not worried by any schedule of values or what *he thinks* is the relative importance of the qualities under consideration. He has before him in each case an actual teacher whose various qualities he is judging in terms of Excellent, Good, Medium, Poor, and Very Poor, with variations. At the end of this series of judgments he sums up these qualities as they appeal to him in this teacher and records in like manner a grade representing her general merit. When a number of such records are combined we find that he has given us, more or less unconsciously, very good evidence as to what qualities he actually lays emphasis upon when he judges teachers. This evidence is the relation which the ratings in the various qualities bear to the ratings in general merit. The amount of emphasis which he puts on any quality will be measured by the degree of correspondence between the two series of ratings. If we put together a large number of such sets of ratings, they should tell us—in so far as they are true—the extent to which these qualities are related to general teaching merit, and this would furnish a basis by which any judge of teachers might correct the emphasis in his own judgments. The determination of the relation between the qualities of merit and general merits and the relative emphasis to be placed on the various factors is the problem immediately before us.

In determining the correlations given below, the ratings of 424 teachers from 39 schools have been combined. As we saw in one study of these ratings in the last chapter, they represent wide variations of ability both on the part of the judges and on the part of the teachers. They come from schools in towns and cities of various sizes and of different character of population. Our instructions to those rating teachers for us were that if all the teachers were not rated, those selected for rating should represent as wide a range of teaching efficiency as the officer

had in his school. There is, therefore, nothing about the method of selection making it improbable that our sampling of the elementary teaching population represents it fairly accurately. On the other hand, the number of teachers rated is very much too small. There is every reason to believe that the rating officers have done the best they could in differentiating their teachers for us. If they have not succeeded in all cases as well as it seems to us they should, their effort is of value in showing what results may be accomplished under present conditions and gives us a starting-point for future development.

Method of correlation.—In bringing these ratings together and determining the correlations between the ratings in general merit and the ratings in the qualities, the material was taken through the following steps:

1. The ratings for each school were brought together on one sheet in a series of small double frequency tables, samples of which are shown in Tables IX and XVI. Each table shows the distribution of the teachers in that school with respect to General Rating (ranks numbered from bottom to top) and to rating in one of the 45 qualities of merits (ranks numbered from left to right).

2. The small tables for each quality in the 39 individual distributions were then combined into a series of 45 larger double frequency tables, one for each quality. Samples of these are shown in Tables XI–XIII.

3. The calculation of the Pearson coefficient of correlation from these tables was a comparatively simple matter.[1] The correlation formula used was

$$r = \frac{E(x-y)}{\sqrt{Ex^2}\ \sqrt{Ey^2}}.$$

The relation of qualities of merit to general merit.—The correlations resulting from the foregoing processes are given in Table X. The arrangement of the 45 qualities is the same as in the score card. Opposite each factor is its coefficient of correlation with general merit and a number indicating the rank of that correlation in the group. The relative ranking of the qualities is shown graphically in the same table.

It will be noticed at once that the qualities having the highest correlation with general merit are those of the "Technique of Teaching".

[1] For a complete account of this method of correlation see Thorndike, *Mental and Social Measurements*, 2d ed., pp. 172–77.

and "Results" groups. The highest ten qualities are found in this part of our schedule. The qualities least positively related to general merit

With		r	Rank
I. *Personal Equipment*—	1. General appearance	.47	43
	2. Health	.56	39
	3. Voice	.53	47
	4. Intellectual capacity	.62	34
	5. Initiative and self-reliance	.77	13
	6. Adaptability and resourcefulness	.80	11
	7. Accuracy	.74	17
	8. Industry	.69	24
	9. Enthusiasm and optimism	.71	22
	10. Integrity and sincerity	.63	33
	11. Self-control	.66	30
	12. Promptness	.66	29
	13. Tact	.69	25
	14. Sense of justice	.62	36
II. *Social and Professional Equipment*—	15. Academic preparation	.41	44
	16. Professional preparation	.38	45
	17. Grasp of subject-matter	.72	19
	18. Understanding of children	.76	15
	19. Interest in the life of the school	.65	31
	20. " " " " " " community	.62	35
	21. Ability to meet and interest patrons	.61	38
	22. Interest in lives of pupils	.69	26
	23. Co-operation and loyalty	.66	28
	24. Professional interest and growth	.72	18
	25. Daily preparation	.68	27
	26. Use of English	.55	40
III. *School Management*—	27. Care of light, heat, and ventilation	.61	37
	28. Neatness of room	.54	41
	29. Care of routine	.64	32
	30. Discipline (governing skill)	.79	12
IV. *Technique of Teaching*—	31. Definiteness and clearness of aim	.81	20
	32. Skill in habit formation	.86	5
	33. Skill in stimulating thought	.84	8
	34. Skill in teaching how to study	.84	7
	35. Skill in questioning	.72	20
	36. Choice of subject-matter	.85	6
	37. Organization of subject-matter	.87	3
	38. Skill and care in assignment	.87	9
	39. Skill in motivating work	.74	16
	40. Attention to individual needs	.76	14
V. *Results*—	41. Attention and response of the class	.86	4
	42. Growth of pupils in subject-matter	.87	2
	43. General development of pupils	.88	1
	44. Stimulation of community	.70	23
	45. Moral influence	.71	21

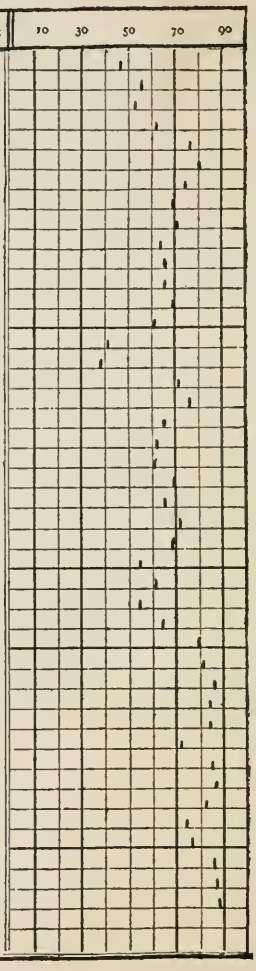


TABLE X.—Correlations of General Rating

are Academic and Professional Preparation, the physical qualities of Appearance, Health, and Voice, Use of English, and Neatness of Room. Only 4 of the 14 personal qualities and 3 of the 12 in the social and

professional group rank as high as the technical qualities. Discipline ranks twelfth, but its correlation of 0.79 is very little below those of the qualities ranking immediately above it. The curve of relationship rises as it moves from the general personal qualities in the first part of the schedule to those having more particular bearing on teaching work.

The correlations examined.—A closer inspection of our data in their immediate relation to these correlations will reveal the reasons for their present ranking. Tables XI, XII, and XIII show the distribution of the teachers in qualities which rank in three different parts of the list. Skill in Teaching How to Study ranking high (7th), Co-operation and Loyalty from the middle of the list (28th), and Health which ranks low (39th). The correlations depend on the degree in which the ratings in the two categories general merit and quality merit tend to be the same. If they were exactly the same, they would be arranged in a diagonal from 10–10 to 1–1 and the correlation would be perfect or 1.00. If those ranking high in one ranked correspondingly low in the other, the ratings would be arranged in a diagonal from 10–1 to 1–10 and the correlation would be negative or −1.00. If they are scattered by chance over the 100 possible combinations, the correlation would be 0. We find all these correlations to be positive, ranging from +0.38 to +0.88. The correlations are higher as the ratings tend to cluster along the diagonal 10–10 to 1–1, and lower as they are scattered from that diagonal.

Skill in Teaching How to Study is one of those qualities in which the ratings in the quality tend to be the same as the General Ratings. Co-operation and Loyalty and Health are more and more scattered. This same difference is shown graphically in Figs. 7, 8, and 9, corresponding to Tables XI, XII, and XIII. In these figures we see the relation between the medians of the two sets of ratings. The solid line in each figure connects the medians of the ratings in the quality which belong to each degree of general excellence. The dotted line connects the medians of the general ratings corresponding to each degree of excellence in the quality. The nearer these two relation lines are together the greater the correlation, and vice versa. If we let these medians stand for the group, we may say from Fig. 7 that the teachers here called excellent have very good Skill in Teaching How to Study, those medium in one are medium in the other, and so on. On the other hand, if we consider Table XI, we find wide variation in individuals. Thus those

SKILL IN TEACHING HOW TO STUDY (r = .84)

General Rating \ Rank	1	2	3	4	5	6	7	8	9	10	No
10								5	22	25	52
9					2		2	38	37	3	82
8			1	1	6	10	29	29	11	2	89
7				3	8	18	27	9	1		65
6			1	5	12	23	9	3			53
5		1	1	5	13	9	2				31
4		1	5	10	3		2				21
3		2	4	4	1						11
2		2	1								3
1		1									1
No.	7	13	27	45	60	71	84	71	30		N 408

TABLE XI

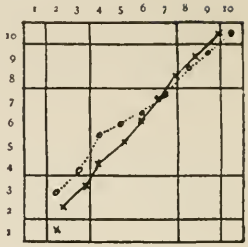


FIG. 7

CO-OPERATION AND LOYALTY (r = .66)

General Rating \ Rank	1	2	3	4	5	6	7	8	9	10	No
10							2	1	6	43	52
9				3		2	2	4	26	49	86
8	1	2		1		2	11	13	20	42	92
7		3		2	3	2	13	14	16	16	69
6				6	2	8	7	12	9	9	53
5		3	7	5	2	4	6	3	2		32
4	1	5	3	2	3	3	3	1	1		22
3	1		4	2		1	1		1		10
2			1				2				3
1							1				1
No.	3	13	27	14	19	44	56	81	103		N 420

TABLE XII

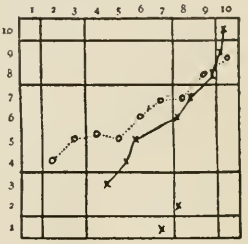


FIG. 8

HEALTH (r = .56)

General Rating \ Rank	1	2	3	4	5	6	7	8	9	10	No.
10		1			1	2	4	11	8	25	52
9				1	4	2	9	8	32	29	85
8		1		2	3	3	15	24	25	19	92
7				4	3	6	16	10	24	7	70
6			2		5	6	6	11	15	9	54
5				2	4	3	7	8	8	1	33
4			1		3	2	5	3	4	4	22
3				2			4	2	2	1	11
2				1	1			1			3
1					1						1
No.	2	3	12	25	24	66	78	119	95		N 423

TABLE XIII

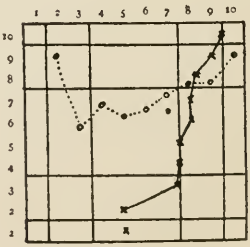


FIG. 9

graded 8 in General Rating range from 3 to 10 in Teaching How to Study.

Co-operation and Loyalty is a combination of virtues upon which much stress is generally laid by rating schemes. The data here presented indicate that, in this group of 420 teachers, while there is considerable correspondence between co-operation and general merit, most of the group are inclined to co-operate and be loyal. This quality varies much less than their general merit. One finds good and poor teachers ranging from poor to excellent in co-operation.

The same is true of Health. Most of the teachers are in good or excellent health, but this does not make them good teachers. Health is a very important asset in teaching, but the possession of it or the lack of it is little indication of teaching ability.

PROFESSIONAL PREPARATION

General Rating / Rank	1	2	3	4	5	6	7	8	9	10	No.
10			3	1	2	1	7	7	14	16	51
9			3	5	9	6	6	19	22	10	80
8	2	2	6	6	6	10	13	21	10	12	88
7	4	4	5	7	9	15	9	6	7	1	67
6	1		4	15	9	10	5		3	3	50
5	1	1	4	8	8	4	2	3	2		33
4	2	3	1	10	2	1	2	1			22
3			2	2	2	2	2			1	11
2			1	2							3
1								1			1
No.	10	10	29	56	47	49	46	58	58	43	N 406

TABLE XIV

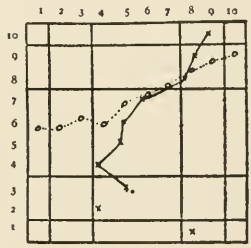


FIG. 10

Most of the qualities which rank in the lower half of the list have their correlation with general merit reduced for this same reason. A striking exception to this is the case of Professional Preparation, which ranks last. The distribution in this quality is shown in Table XIV and Fig. 10.

In Table XIV it is to be noticed that the majority of the teachers are rated Medium or below. The median General Rating corresponding to the various grades of Professional Preparation (dotted line, Fig. 10) drops from Good to Medium. The median Preparation of each grade of general excellence (solid line) drops from Good almost to Poor. The poorest teacher of all has very good professional preparation, being a normal graduate. The position of the curves would indicate more

correlation than the Pearson coefficient (0.38) gives. The low correlation is due to the widely scattered character of the distribution.

Experience.—The influence upon teaching ability of the number of years taught is much less than might be expected, judging from the importance laid upon it by those employing teachers. The facts in the case of the group of 411 teachers for whom we have information are shown in Table XV and Fig. 11. The median number of years taught by the 411 teachers is 6.2. Thirty-six per cent of the group had less than 5 years of experience. After the 2–4 year period the numbers are rapidly reduced. The curve showing the general merit corresponding to each group of years of experience rises to 18 years and tends downward from that point. That experience is positively related to merit for at least

EXPERIENCE

Years

General Rating	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42+	No
10	3	10	6	6	2	4	4	3	8	1	2	1		1		51
9	6	14	18	13	11	7	7	4	1		1	1				83
8	6	35	15	8	11	8	2	2	1		1					89
7	2	25	17	6	5	6	3	2		2		1	1			70
6	6	17	5	4	4	3	1	3	4	1		1			1	51
5	2	10	7	3	1	3	1	3	1		1			1		33
4	3	5	5	1		1	1		2		1					20
3		5	1	1						1			1		1	10
2		1	1					1								3
1			1													1
No.	28	122	76	42	34	32	20	18	17	6	6	4	2	2	2	N 411

TABLE XV

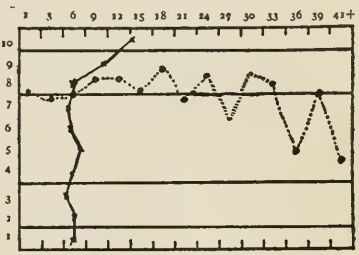


FIG. 11

part of a teacher's career is shown also by the relation line giving the median years of experience for each grade of merit. The medians fall from 14 years at Grade X to 5 years at Grade VIII. From that point on, however, there seems to be no relation between the two. The Pearson coefficient of correlation between experience and general merit is −0.08.

Validity of the correlations.—The coefficients which we have given as indicating the relations between the various qualities and general merit probably show quite accurately the relative importance of these factors as they are found in this group of teachers by these judges; but that the coefficients are accurate absolute measures of the relations either in teachers in general or in this group of 424 may very seriously be called in question.

Errors of selection: Errors of this kind are not serious as far as our present problem is concerned. They do, however, prevent the results from being universally applicable for the reason that our sample of the teaching population leaves out that very large part of it found in the small town and country schools. It has been our effort to secure the co-operation of the better judges of teachers in large towns and cities. In this limited field the selection is without doubt quite representative, but the number is a very small proportion of the whole teaching body they represent.

Errors of judgment: The greatest source of error is of course in the ratings themselves. Several factors conspire to make the ratings less reliable than they should be to give us absolutely accurate correlations. (1) In the first place, the ratings were, except in eight cases, the first ratings which the officers had made by this method. Greater familiarity with the scheme and more practice would give much more accurate results. (2) The varying standards of the judges have already been commented on. The ratings differ in reliability because some officers with low standards of excellence are easily satisfied and have rated their teachers high, while other officers, with teachers probably actually no worse, have rated their teachers lower because their standards of excellence are higher. (3) Allied to this is the unreliability of judges due to their inability to discriminate different grades of excellence.

The effect of different types of judgment is seen in Table XVI where the teachers in four schools, representing good and poor discrimination, are shown as distributed in three qualities representing low, medium, and high correlation. Schools IV*b* and XX show poor discrimination, while Schools III and XV show much better discrimination both in general ratings and in the qualities. That is, the type of judgment affects both the general and the particular ratings.

The general effect of these factors seems to be to make the ratings higher than the teachers really deserve. We find the General Ratings distributed as follows:

	Very Poor	Poor		Medium				Good		Excellent
Grade	1	2	3	4	5	6	7	8	9	10
Frequency	1	3	11	22	33	54	70	92	86	52

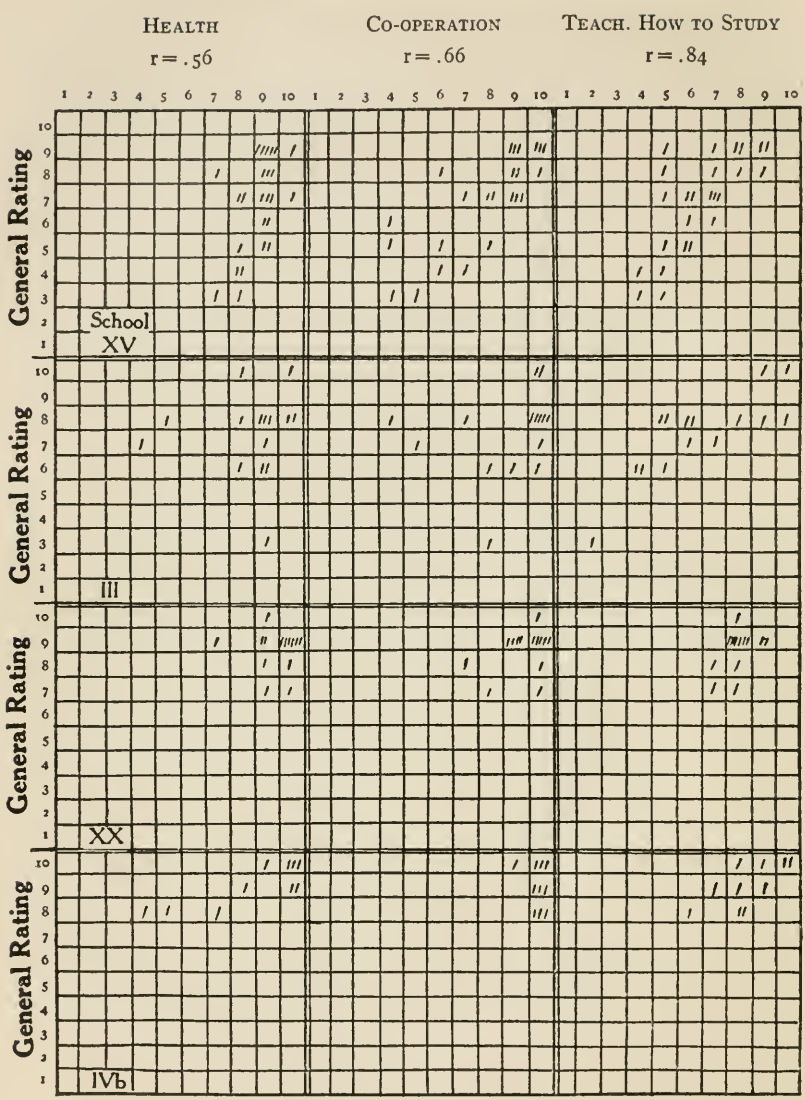


Table XVI.—Sample distributions from four schools showing effect of different degrees of differentiation.

Lack of discrimination and generous judgments have, therefore, tended to put teachers in the upper right-hand squares, nearer the diagonal of perfect correlation, thus raising the correlation for the group.

The obvious remedy for these difficulties is to have a body of competent judges trained to a common standard and have them judge the same body of teachers many times; but such conditions have so far been impossible to obtain.

Errors of manipulation: Mistakes in handling the figures in forming the frequency tables and in working out the correlations have, of course, been guarded against by checking them at every possible point. Certainly no constant errors of this kind have been present.

It is probable that the method of correlation employed has counteracted somewhat the effect of the high ratings mentioned above. Since the ratings were subject more or less to the constant error of tending toward sameness when they should have been more widely different, it is important that the method of correlation emphasize the differentiations that were made.

Results compared with other studies.—The results obtained by the present method agree with and confirm other studies of the same kind. Unfortunately, no two lists of qualities are the same, but, as far as comparison is possible, we find the following points common to the study by Ruediger and Strayer into qualities of merit in elementary teachers, to that of the present writer in the high-school field, and to the present investigation.

Rank of Quality	Present Study	Boyce—Study of High-School Teachers	Ruediger and Strayer—Study of Elementary Teachers
Instructional skill	1	1	2
Discipline	2	2	1
Initiative	3	3	3
Experience	6	4	4
General appearance	5	5	5
Health	4	6	6

These three studies confirm each other also as to the relation which experience bears to efficiency. The relation seems to be positive for a number of years during which efficiency increases with experience. This positive relation extends to 18 years in the present study, to 20 or 25 n Ruediger and Strayer's results, and to about 15 in the study of

high-school teachers. After this period, the latter part of which may be characterized by rather stationary efficiency, teaching ability begins to decline.

SUMMARY

1. The qualities apparently most important in the judging of teaching efficiency are those under the heads of "Results" and "Technique of Teaching."

2. The qualities least associated with general merit are Professional and Academic Preparation and the physical qualities of Health, General Appearance, and Voice.

3. Experience is not equally related to efficiency at all stages. Efficiency increases with experience for 15 or 20 years; after that period, efficiency does not increase in most of the cases of which we have records.

4. The validity of the correlations we have determined is much weakened principally by (1) the small number of cases, and (2) the difficulty of getting accurate ratings.

5. The results of the present study confirm those obtained by others as to the importance of the teacher's technique and her ability to get results.

CHAPTER VI

GENERAL SUMMARY AND CONCLUSIONS

The following points are apparently most important as resulting from our study of the problem up to this point.

1. The relative merits of teachers are determined almost altogether by some sort of "rating" or estimation by supervisory officers. For the most part this judgment is formed by general impressions and is not a result of an analysis of the situation.

2. The need for analysis is recognized by many schools, as shown by their methods of reporting efficiency. The weaknesses of these schemes now in use have to do principally with (*a*) their choice of terms, resulting in inadequate analysis, (*b*) the lack of definition of terms, resulting in vagueness and indefiniteness, and (*c*) the method of recording judgments, which is frequently wasteful of time or inaccurate or uncontrolled or all three.

3. The method of rating proposed in this study overcomes to some extent the difficulties involved by a comprehensive list of qualities, careful definition of terms, and the graphical method of recording judgments. When a large number of school officials use the scheme, however, the following weaknesses appear in the ratings: (*a*) Ratings which should be the same or nearly the same may differ widely because of differing standards of excellence in the minds of different rating officers. (*b*) School officials are not equally able to judge teachers and discriminate carefully between their various qualities.

4. The tests show that comparable and uniformly accurate reports on teaching efficiency are not to be had at present and that, to obtain them, supervisors have to be trained to a similar standard of excellence and given a common fund of information.

5. When the relation between general merit and the various qualities of merit is determined on the basis of ratings by the graphical method proposed, the following relations appear: (*a*) The supervisors co-operating in this study have put most emphasis on results obtained and technical skill displayed and least on the more general personal factors. (*b*) In general, increased professional preparation increases efficiency, but the correlation is low because of the widely varying preparation of the teachers rated. (*c*) Experience is positively related to efficiency for only part of a teacher's career.

APPENDIX

SAMPLE SCORE CARDS FOR RATING TEACHERS

Two sample score cards for rating teachers are here presented. The first is one proposed by Professor E. C. Elliott, of the University of Wisconsin. It is a tentative scheme for measuring teaching efficiency which has attracted much attention and which has been widely used as a pattern. A few places have been found to use the scheme as a whole.

The plan was originally presented in 1910. The copy given here is of the latest edition, which is not materially different from the first, except that the section "Supervisory Efficiency" has been added with a consequent rearrangement of the values.

PROVISIONAL PLAN

FOR THE

MEASURE OF MERIT OF TEACHERS

EDWARD C. ELLIOTT
The University of Wisconsin

City (District)..... School..... Room.....
Teacher..... Grade..... Subject.....

No. of Pupils.....Boys... Girls... Date.....
Special conditions.....
.....

GENERAL INSTRUCTIONS

Deduct from possible 10; very slight, 2; slight, 4; marked, 6; very marked, 7; extreme, 8. (Possible 20, 40, 60, 80, or 100, in same proportion.)

Total efficiency=Total Individual Efficiency *plus* Total Directed Efficiency.

Minimum standard for approval; according to the standards and exigencies of the school or school system.

Individual Efficiency—800 Units	Suggested Values	Deficiencies	Determined Values
I. PHYSICAL EFFICIENCY—80 units	(*80*)	.....	.....
1. Impressions—general.....	10	.....	.....
2. Health—general	20	.....	.....
3. Voice.....	20	.....	.....
4. Habits—personal.....	10	.....	.....
5. Energy and endurance; power of relaxation.	20	.....	.....

PROVISIONAL PLAN—*Continued*

Individual Efficiency—800 Units	Suggested Values	Deficiencies	Determined Values
II. MORAL—NATIVE EFFICIENCY—100 units	(*100*)	.....	.....
1. Self-control	20	.....	.....
2. Optimism—enthusiasm	20	.....	.....
3. Sympathy—tact	20	.....	.....
4. Industry—sense of responsibility	10	.....	.....
5. Adaptability	10	.....	.....
6. Sense of humor	10	.....	.....
7. Judicial mindedness	10	.....	.....
III. ADMINISTRATIVE EFFICIENCY—80 units	(*80*)	.....	.....
1. Regularity at post of duty	10	.....	.....
2. Initiative; resourcefulness	20	.....	.....
3. Promptness and accuracy	10	.....	.....
4. Executive capacity	20	.....	.....
5. Economy (time, property)	10	.....	.....
6. Co-operation (associates and superiors)	10	.....	.....
IV. DYNAMIC EFFICIENCY—180 units	(*180*)	.....	.....
1. Preparation. Including: (*a*) intellectual capacity; (*b*) academic education; (*c*) professional training; (*d*) command and use of English	20	.....	.....
2. Professional attitudes and interest	10	.....	.....
3. Human nature attitudes and interest (Appreciation of values—physical, intellectual, social, and moral, in child life)	10	.....	.....
4. Instructional skill	80	.....	.....
Including:			
a) Definiteness of aim and procedure			
b) Attention and interest of pupils			
c) Formality vs. vitality of instruction			
d) Motor vs. verbal methods			
e) Application of the technique of teaching; organization and presentation of subject-matter; the recitation as an *artistic* product			
f) Application of the technique of living; extent and quality of participation and contribution of pupils; the recitation as a *democratic activity*			
g) The tools and machinery of instruction; effective adaptation			
h) Assignment of work			
5. Responsiveness to directions and suggestions	20	.....	.....
6. Governmental and directive skill (discipline)	40	.....	.....
V. PROJECTED EFFICIENCY—50 units	(*50*)	.....	.....
1. Economical oversight of pupils not immediately under instruction	10	.....	.....

PROVISIONAL PLAN—*Continued*

Individual Efficiency—800 Units	Suggested Values	Deficiencies	Determined Values
2. Continuing preparation (*a*) Daily; (*b*) Weekly; (*c*) Annual	10	.....	.....
3. The school program	10	.....	.....
4. Increase of professional equipment (professional association, study and reading; travel)	20	.....	.....
VI. Achieved Efficiency—250 units	(*250*)	.....	.....
1. Respect of pupils and community	30	.....	.....
2. Leadership; stimulation of individuals and community	30	.....	.....
3. School achievement			
a) Responsiveness of pupils; readiness and accuracy	30	.....	.....
b) Illustrative results	80	.....	.....
c) Examinations; rate and amount of progress of pupils	80	.....	.....
VII. Social Efficiency—60 units.	(*60*)	.....	.....
1. Intra-mural interests	30	.....	.....
2. Extra-mural interests			
a) Cultural and ethical	10	.....	.....
b) Civic	10	.....	.....
c) School—patrons	10	.....	.....
Total Individual Efficiency	800	.....	.....

Directed Efficiency—200 Units	Suggested Values	Deficiencies	Determined Values
I. Supervisory Efficiency—200 units	(*200*)	.....	.....
1. Constructive criticism	40	.....	.....
2. Non-interfering supervision	40	.....	.....
3. Community encouragement	40	.....	.....
4. Professional confidence	40	.....	.....
5. Recognition of individuality	40	.....	.....
Total Directed Efficiency	200	.....	.....

SUMMARY

Determined Individual Efficiency ..... units

Determined Directed Efficiency ..... units

Total Efficiency ..... units

SPECIAL NOTE

It is believed that this analytical plan for the study of teaching merit will be of the greatest service if placed directly in the hands of teachers for their own guidance, and as a basis for co-operative effort between teachers and supervisors. *The plan is not intended to be used as a score card by inspectors.*

While the numerical values assigned to the several items are thought to represent general proportional worths, they may be considered as arbitrary, and as affording merely a convenient device for the recording of objective judgments and for the better diagnosis of defects.

(Copyrighted, 1914, by Edward C. Elliott)

The second score card is one used by certain representatives of the New York Bureau of Municipal Research in some of their investigations. The contents of the front and reverse of the card are shown on pp. 82–83.

SCHOOL	GRADE	H. S. YEAR	TEACHER	DATE

I. PERSONALITY OF TEACHER (Check ✓)

ILLUSTRATIONS

1. Teacher appears to be

vigorous..... weak.....
poised..... nervous.....
neat..... slovenly.....
at ease..... embarrassed...

2. Voice is (Check ✓)

pleasing..... harsh.....
clear..... indistinct.....
low..... high.....

3. In her personal relations with pupils does she appear (Check ✓)

to stimulate..... to suppress.....
to win cordial co-operation..... to antagonize....
to be sympathetic harsh.....
strict..... lax.....
even tempered... irritable.....
reasonable..... unreasonable.....
tolerant..... intolerant.....
dignified..... undignified.....

courteous..... rude.....
encouraging..... nagging.....
firm..... weak.....
tactful..... blundering.....
enthusiastic..... diffident.....
quick to react.... slow to react.....
quiet..... noisy.....
systematic..... disorderly.....
resourceful..... dependent.....

ILLUSTRATIONS

II. THE RECITATION

ILLUSTRATIONS

1. No. of pupils in class appearing

to be interested..... indifferent.....
energetic..... lazy.....
independent..... dependent.....

2. Responses of pupils: No. giving

(*a*) fluent topical recitations.....
(*b*) word or phrase responses.....
(*c*) sentence responses.....
(*d*) incoherent responses.....
(*e*) failing to answer.....

3. No. of pupils in section

not reciting....reciting once....twice....
three times....more than three times....

4. No. pupils in room but not in reciting section.....

No. industrious.....indolent.....
minding their own business.....
interfering with others.....

5. No. of pupils asking

pertinent questions of fact.....
relevant thought-provoking questions.....

6. Time lost (Check ✓ under yes and no)

	Yes	No.	No. Min.
(*a*) Calling class.....	....	....	.....
(*b*) Dismissing class.....	....	....	.....
(*c*) Distributing materials.....	....	....	.....
(*d*) Indistinct speech of teacher.....	....	....	.....
(*e*) Indistinct speech of pupils.....	....	....	.....
(*f*) Unnecessary talking of teacher...	....	....	.....
(*g*) Unnecessary talking of pupils...	....	....	.....
(*h*) Failure to have devices ready...	....	....	.....
(*i*) Use of ill-adapted devices.....	....	....	.....

ILLUSTRATIONS

(*Reverse side*)

(Check ✓)

II. 7. **Teaching Ability as shown by**	Not at all	Slight	Medium	Notable	Evidence and Remarks
a) **Extent to which teacher's questions are**					
(1) thought-provoking	..	..	..	..	
(2) calling for facts	..	..	..	..	
(3) suggesting the answer	..	..	..	..	
(4) answered by "yes" or "no"	..	..	..	..	
(5) irrelevant	..	..	..	..	
(6) not definite—vague	..	..	..	..	
b) **Extent to which material of recitation is**					
(1) confined to text	..	..	..	..	
(2) within pupil's comprehension	..	..	..	..	
(3) related to children's lives and experiences	..	..	..	..	
(4) adapted to children's present or future needs	..	..	..	..	
(5) worth while	..	..	..	..	
c) **Extent to which the teaching**					
(1) is rambling	..	..	..	..	
(2) is formal, mechanical	..	..	..	..	
(3) stimulates initiative of pupils	..	..	..	..	
(4) requires independent thinking	..	..	..	..	
(5) develops pupil's resourcefulness	..	..	..	..	
(6) requires co-operation of pupils	..	..	..	..	
(7) is fixed on essentials	..	..	..	..	
(8) requires pupils to organize material	..	..	..	..	
(9) utilizes children's experience	..	..	..	..	
(10) clears up pupils' difficulties	..	..	..	..	
(11) shows use of material in solution of present or future problems	..	..	..	..	

(Check ✓)

Teaching Ability	N.	S.	M.	N.	Evidence and Remarks
d) **Extent to which pupils**					
(1) had a clear idea of purposes of lesson	..	..	..	..	
(2) were self-reliant	..	..	..	..	
(3) tested their own solutions	..	..	..	..	
(4) acted and thought on their own account	..	..	..	..	
(5) co-operated with teacher and classmates	..	..	..	..	
(6) persisted in getting desired result	..	..	..	..	
(7) differentiated between essentials and non-essentials	..	..	..	..	
(8) organized their material	..	..	..	..	
(9) seemed well grounded in previous work	..	..	..	..	

8. **Was the assignment**	Yes	No
a) definite and clear?	....	....
b) related to present lesson?	....	....
c) such that the pupils were prepared to attack it intelligently?	....	....
d) formal—from textbook?	....	....
e) by topics or problems?	....	....
f) hastily made at dismissal?	....	....
g) omitted?	....	....

9. **Correction of essential erfors**

(1) Describe method used.....

(2) Are nonessential errors too much emphasized?.....

(3) What record is kept of recurring errors likely to retard progress of pupils?.....

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